AD-A124 380 INSTALLATION RESTORATION PROGRAM RECORDS SEARCH FOR MOODY AIR FORCE BASE GEORGIA(U) CH2M HILL GAINESVILLE FL FEB 83 F08637-80-G-0010 1/3

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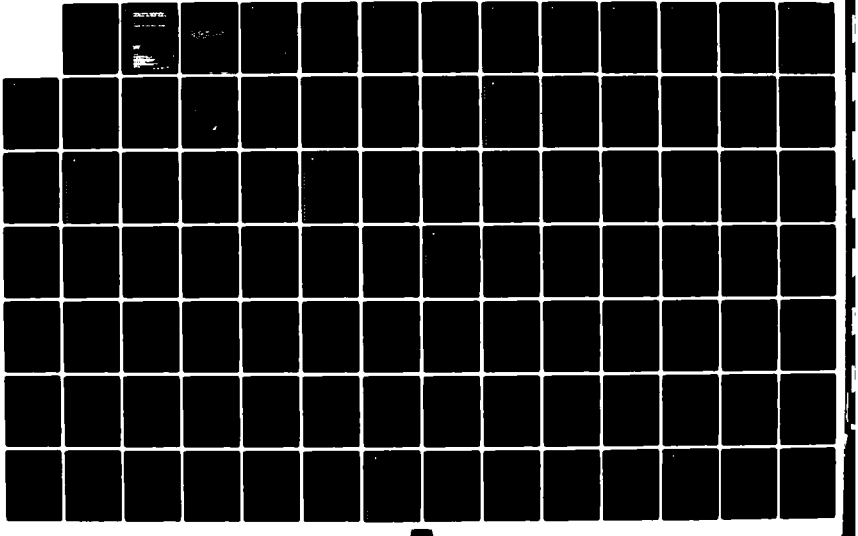

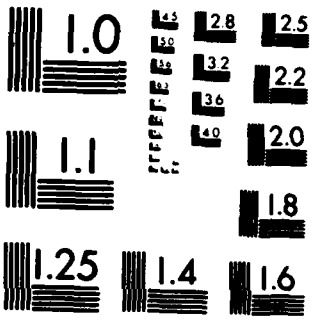

MICROCOPY RESOLUTION TEST CHART
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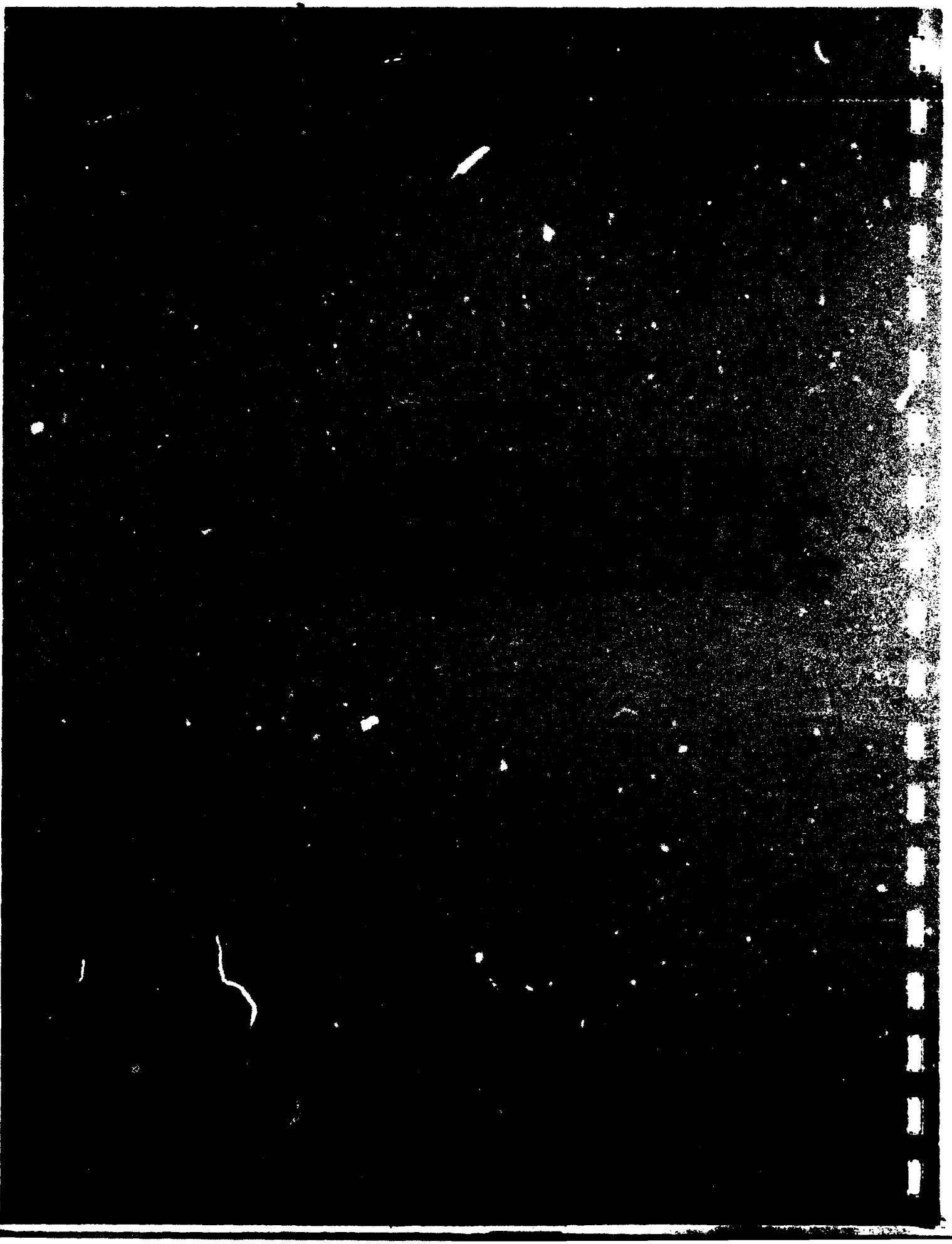

INSTALLATION RESTORATION PROGRAM RECORDS SEARCH

FOR

MOODY AIR FORCE BASE, GEORGIA

Prepared for

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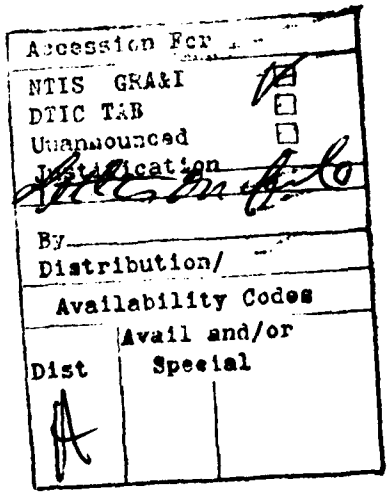
February 1983

Contract No. F08637-80-G0010-5W01

NOTICE

This report has been prepared for the United States Air Force by CH2M HILL SOUTHEAST, INC., for the purpose of aiding in the implementation of the Air Force Installation Restoration Program. It is not an endorsement of any product. The views expressed herein are those of the contractor and do not necessarily reflect the official views of the publishing agency, the United States Air Force, nor the Department of Defense.



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LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS USED IN THE TEXT

LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS USED IN THE TEXT

AFB	Air Force Base
AFESC	Air Force Engineering and Services Center
AFFF	Aqueous Film-Forming Foam
AFS	Air Force Station
AG	Aboveground
AGE	Aerospace Ground Equipment
AGS	Aircraft Generation Squadron
ATC	Air Training Command
AVGAS	Aviation Gasoline
BG	Belowground
Bldg.	Building
bls	Below Land Surface
BOD_5	Biochemical Oxygen Demand (5-day)
CE	Civil Engineering
CES	Civil Engineering Squadron
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)
COD	Chemical Oxygen Demand
CRS	Component Repair Squadron
DEQPPM	Defense Environmental Quality Program Policy Memorandum
DO	Dissolved Oxygen
DoD	Department of Defense
DPDO	Defense Property Disposal Office
EMS	Equipment Maintenance Squadron
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
°F	Degrees Fahrenheit
FAA	Federal Aviation Administration
ft/day	Feet per Day
ft/ft	Feet per Foot
ft/min	Feet per Minute
gal/mo	Gallons per Month
gal/yr	Gallons per Year

GATR	Ground Air Transmitter Receiver
gpd	Gallons per Day
gpm	Gallons per Minute
HARM	Hazard Assessment Rating Methodology
IRP	Installation Restoration Program
JP	Jet Petroleum
JSS	Joint Surveillance System
lb/yr	Pounds per Year
Max.	Maximum
mg/l	Milligrams per Liter
mgd	Million Gallons per Day
Min.	Minimum
mo.	Month
MOGAS	Motor Gasoline
mph	Miles per Hour
msl	Mean Sea Level
NDI	Non-Destructive Inspection
No.	Number
NPDES	National Pollutant Discharge Elimination System
OEHL	Occupational and Environmental Health Laboratory
PCBs	Polychlorinated Biphenyls
POL	Petroleum, Oil, and Lubricants
ppb	Parts per billion
RCRA	Resource Conservation and Recovery Act
TAC	Tactical Air Command
TCE	Trichloroethylene
TFW	Tactical Fighter Wing
TOC	Total Organic Carbon
TOX	Total Organic Halogen
USAF	United States Air Force
USDA	United States Department of Agriculture
µg/l	Microgram per Liter
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

A. INTRODUCTION

1. CH2M HILL was retained on September 8, 1982, to conduct the Moody Air Force Base (AFB) records search under Contract No. F08637-80-G0010-5W01, with funds provided by Tactical Air Command (TAC).

2. In order to ensure compliance of military installations with hazardous waste regulations, the Department of Defense (DoD) developed the Installation Restoration Program (IRP). Current DoD policy on past hazardous waste disposal sites is contained in Defense Environmental Quality Program Policy Memorandum (DEQPPM) 81-5 dated 11 December 1981 and implemented by Air Force message dated 21 January 1982 as a positive action to ensure compliance of Air Force installations with existing environmental regulations. DoD policy is to identify and fully evaluate suspected problems associated with past hazardous material disposal sites on DoD facilities, control the migration of hazardous contamination from such facilities, and control hazards to health and welfare that may have resulted from these past operations. The IRP provides a basis for response actions on USAF installations under the provisions of the Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 and clarified by Executive Order 12316.

3. To implement the DoD policy, a four-phase Installation Restoration Program has been directed. Phase I, the records search, is the

identification of potential problems. Phase II (not part of this contract) consists of follow-on field work as determined from Phase I. Phase II consists of a preliminary survey to confirm or rule out the presence and/or migration of contaminants and, if necessary, additional field work to determine the extent and magnitude of contaminant migration.

Phase III (not part of this contract) consists of a technology base development study to support the development of project plans for controlling migration or restoring the installation. Phase IV (not part of this contract) includes those efforts which are required to control identified hazardous environmental conditions.

4. The Moody AFB records search included a detailed review of pertinent installation records, contacts with 19 government organizations for documents relevant to the records search effort, and an onsite base visit conducted by CH2M HILL during the week of October 18 through October 22, 1982. Activities conducted during the onsite base visit included interviews with 43 past and present base employees, ground tours of base facilities, detailed search of installation records, and a helicopter overflight to identify past disposal areas. The installations addressed in the records search include Moody AFB, Whitehouse Tower Radar site, Cross City Tower Radar site, a Ground Air Transmitter Receiver (GATR) site, and Grassy Pond Recreational Annex.

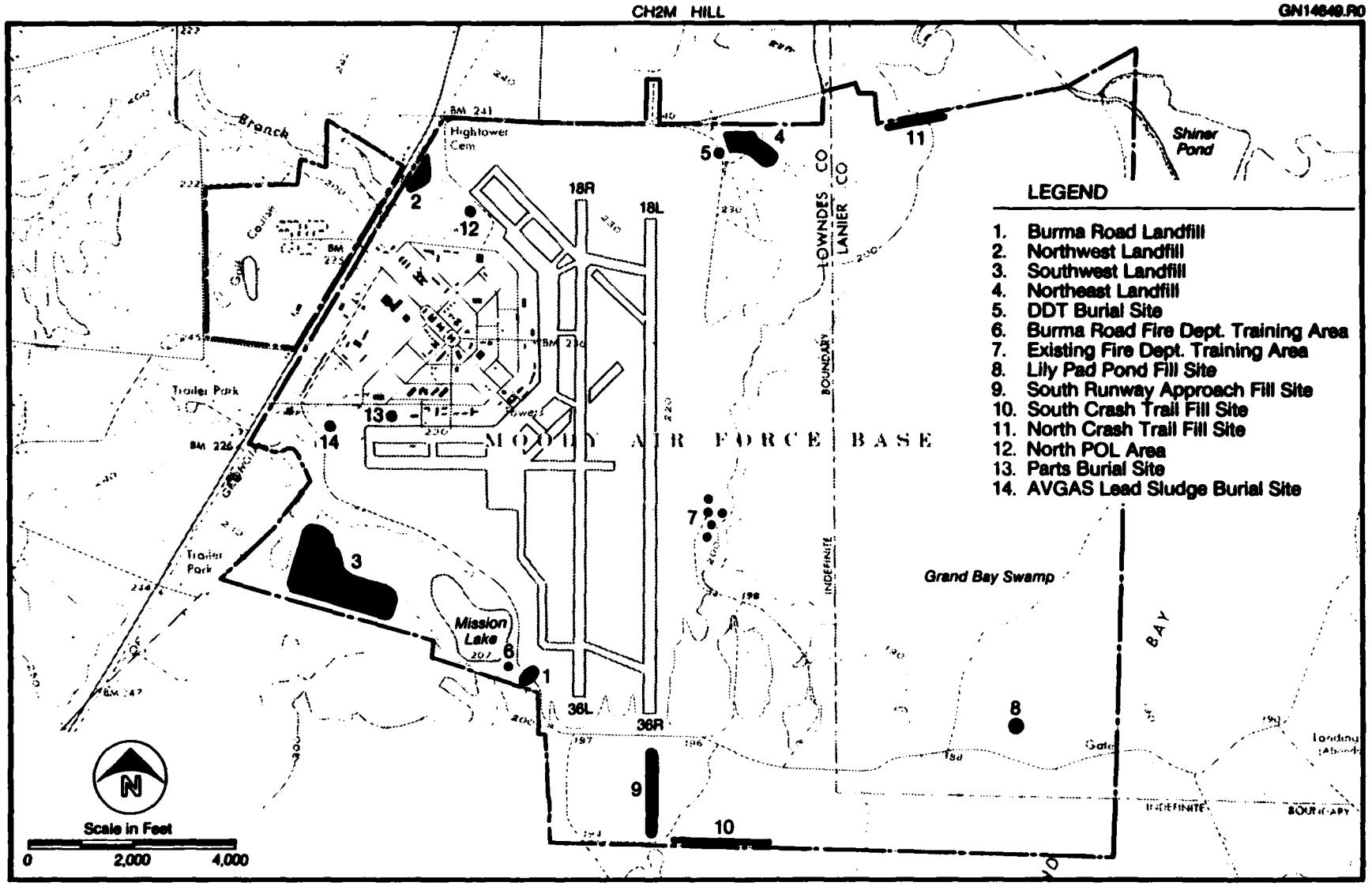
B. MAJOR FINDINGS

1. The majority of industrial operations at Moody AFB have been in existence since the early 1940's. The base was deactivated after World War II and not reactivated until 1951. Industrial operations were not conducted and therefore related wastes were not generated during those years. The major industrial operations include pneudraulic, engine, aerospace ground equipment, corrosion control, and wheel and tire maintenance shops. These industrial operations have generated varying quantities of waste oils, fuels, solvents, and cleaners. The total quantity of these wastes ranged from 25,000 to 50,000 gallons per year.

2. The standard procedures for the final disposition of the majority of the waste oils, fuels, and solvents has been (1) fire department training exercises (1941 to 1946), (2) fire department training exercises, contractor collection and removal, and discharge to sanitary sewers and storm drains (1955-1975), and (3) segregation and conveyance to DPDO for off-base disposal (1975-present).

3. Interviews with past and present base employees resulted in the identification of 14 past disposal or spill sites at Moody AFB and the approximate dates that these sites were used (see attached figure, page 4, for site locations).

4. Interviews with past and present employees resulted in the identification of one past landfill site at Grassy Pond Recreational Annex. No disposal or spill sites were identified at Whitehouse Tower, Cross City Tower, or the GATR site.



Location map of identified disposal and spill sites at Moody AFB, Georgia.

C. CONCLUSIONS

1. No direct evidence was found to indicate that migration of hazardous contaminants exists within or beyond Moody AFB boundaries. Analyses of base potable water supply wells and several nearby off-base potable water supply wells show that these wells do not exceed primary drinking water standards for pesticides and heavy metals.

2. Indirect evidence of contamination was found at Site No. 8 (oil slick on nearby surface water) and at Site No. 12 (environmentally stressed pine trees). No other indications of environmental stress were noted.

3. Information obtained through interviews with 43 past and present base personnel (records, shop folders, and field observations) indicate that hazardous wastes have been disposed of on Moody AFB property in the past.

4. The potential for migration of hazardous contaminants into the water table aquifer is high because of (1) high ground-water table and (2) high precipitation in the area. Contaminants would likely travel vertically to the water table, then laterally to discharge to adjacent surface waters. The potential for contaminant migration into the principal artesian aquifer is low due to the presence of a thick, low-permeability clay layer at a depth of about 100 to 150 feet. Therefore, the potential for contaminants to enter the principal artesian aquifer and migrate to major potable water supply wells is low.

5. Table 1 presents a priority listing of the rated sites and their overall scores. The following sites were designated as areas showing the most significant potential (relative to other Moody AFB sites) for environmental impact.

   a. Southwest Landfill (Site No. 3)

   b. Lily Pad Pond Fill Site (Site No. 8)

   c. North POL Area (Site No. 12)

   d. DDT Burial Site (Site No. 5)

6. An area of concern, other than disposal sites, is Mission Lake which receives storm drainage from the flightline shops and the main POL area. Hazardous contaminants may have entered this recreational lake in the past.

7. The remaining rated sites (Sites No. 1, 2, 4, 6, and 7) are not considered to present significant environmental concerns and, therefore, no Phase II work is recommended.

8. The records search did not indicate any significant environmental concerns for Whitehouse Tower, Cross City Tower, the GATR site, or Grassy Pond Recreational Annex. Therefore, no Phase II work is recommended for the above off-base installations.

D. - RECOMMENDATIONS

1. A limited Phase II monitoring program is suggested for Sites No. 3, 8, and 12 and for Mission Lake to confirm or rule out the presence and/or migration

Table 1
PRIORITY LISTING OF DISPOSAL SITES

Site No.	Site Description	Overall Score
3	Southwest Landfill	56
8	Lily Pad Pond Fill Site	56
12	North POL Tank Farm	55
5	DDT Burial Site	53
6	Burma Road Fire Department Training Area	52
7	Existing Fire Department Training Area	51
1	Burma Road Landfill	49
4	Northeast Landfill	49
2	Northwest Landfill	45

of hazardous contaminants. The details of the limited Phase II monitoring program are provided in Section VI of this report. The priority for monitoring at Moody AFB is considered low to moderate and no imminent hazard has been determined.

2. The final details of the monitoring program, including the exact locations of ground-water monitoring wells, should be finalized as part of the Phase II program.

3. In the event that contaminants are detected, a more extensive field survey program should be implemented to determine the extent of contaminant migration.

4. Phase IV action (excavation and removal of buried DDT drums is recommended for Site No. 5 (DDT burial site).

5. In addition to the Phase II monitoring, additional recommendations are presented for consideration by the Air Force as part of an in-house program, details of which are provided in Section VI of this report.

I. INTRODUCTION

I. INTRODUCTION

A. BACKGROUND

The United States Air Force (USAF), due to the nature of its mission, has long been engaged in operations dealing with toxic and hazardous materials. Federal, state, and local governments have developed regulations that require disposers to identify the locations and contents of disposal sites and take action to eliminate hazards. The primary Federal legislation governing disposal of hazardous waste is the Resource Conservation and Recovery Act (RCRA) of 1976. Under Sections 3012 and 6003 of the act, Federal agencies are directed to assist the Environmental Protection Agency (EPA) and state agencies to inventory past and present hazardous waste disposal sites.

In order to ensure compliance of military installations with hazardous waste regulations, the Department of Defense (DoD) developed the Installation Restoration Program (IRP). Current DoD policy on past hazardous waste disposal sites is contained in Defense Environmental Quality Program Policy Memorandum (DEQPPM) 81-5 dated 11 December 1981 and was implemented by Air Force message dated 21 January 1982. DoD policy is to identify and fully evaluate suspected problems associated with past hazardous material disposal sites on DoD facilities, to control the migration of hazardous contamination, and to control hazards to health and welfare that may have resulted from these past operations. The IRP provides a basis for response actions on USAF installations under the provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 and clarified by Executive Order 12316.

To conduct the IRP Hazardous Materials Disposal Sites Records Search for Moody AFB, Georgia, CH2M HILL was retained on September 8, 1982 under Contract No. F08637-80-G0010-5W01

with funds provided by Tactical Air Command (TAC). The installations included in the records search include: (1) Moody AFB near Valdosta, Georgia; (2) Grassy Pond Recreational Annex; (3) Whitehouse Tower near Jacksonville, Florida; (4) Cross City Tower near Cross City, Florida; and (5) GATR Radar site near Green Cove Springs, Florida. A location map of these sites is shown on Figure 1 (page VIII-1).

The records search comprises Phase I of the DoD Installation Restoration Program and is intended to review installation records to identify possible hazardous waste-contaminated sites and to assess the potential for contaminant migration. Phase II (not part of this contract) consists of follow-on field work as determined from Phase I. Phase II consists of a preliminary survey to confirm or rule out the presence and/or migration of contaminants and if necessary, additional field work to determine the extent and magnitude of the contaminant migration. Phase III (not part of this contract) consists of a technology base development study to support the development of project plans for controlling migration or restoring the installation. Phase IV (not part of this contract) includes those efforts which are required to control identified hazardous environmental conditions.

B. AUTHORITY

The identification of hazardous waste disposal sites at Air Force installations was directed by Defense Environmental Quality Program Policy Memorandum 81-5 (DEQPPM 81-5) dated 11 December 1981, and implemented by Air Force message dated 21 January 1982, as a positive action to ensure compliance of Air Force installations with existing environmental regulations.

C. PURPOSE OF THE RECORDS SEARCH

DoD policy is to identify and fully evaluate suspected problems associated with past hazardous material disposal sites and spill sites on DoD facilities, control the migration of hazardous contamination, and control hazards to health or welfare that may have resulted from these past operations. The existence and potential for migration of hazardous material contaminants were evaluated at Moody AFB by reviewing the existing information and conducting an analysis of installation records. Pertinent information included the history of operations, the geological and hydrogeological conditions which may have contributed to the migration of contaminants, and the ecological settings which indicated environmentally sensitive habitats or evidence of environmental stress.

D. SCOPE

The records search program included a pre-performance meeting, a preliminary coordination meeting, an onsite base visit, a review and analysis of the information obtained, and preparation of this report.

The pre-performance meeting was held at Moody AFB, Georgia, on September 10, 1982. Attendees at this meeting included representatives of the Air Force Engineering and Services Center (AFESC), Tactical Air Command (TAC), Moody AFB, and CH2M HILL. The purpose of the pre-performance meeting was to provide detailed project instructions, to provide clarification and technical guidance by AFESC, and to define the responsibilities of all parties participating in the Moody AFB records search.

A CH2M HILL representative conducted a preliminary visit to Moody AFB on October 7 and 8, 1982 to become

familiar with the installation and to prepare for the records search team base visit.

The onsite base visit was conducted by CH2M HILL from October 18 through 22, 1982. Activities performed during the onsite visit included a detailed search of installation records, ground and aerial tours of the installation, and interviews with past and present base personnel. At the conclusion of the onsite base visit, the Group Commander was briefed on the preliminary findings. The following individuals comprised the CH2M HILL records search team:

1. Mr. Norman Hatch, Project Manager (M.S. Chemistry, 1972; M.S. Environmental Engineering, 1973)

2. Mr. Bruce Haas, Assistant Project Manager (M.S. Civil Engineering, 1976)

3. Dr. Robert Knight, Ecologist (M.S. Environmental Chemistry and Biology, 1973; Ph.D. Systems Ecology, 1980)

Resumes of these team members are included in Appendix A. Government agencies were contacted for information and relevant documents. Appendix B lists the agencies contacted.

Individuals from the Air Force who assisted in the Moody AFB records search include the following:

1. Mr. Bernard Lindenberg, AFESC, Program Manager, Phase I

2. Mr. Myron Anderson, AFESC, Environmental Engineer

3. Mr. Gil Burnet, TAC, Command Program Manager, Phase I

4. Mr. John H. Eiseman, II, Moody AFB, Environmental Coordinator

5. Capt. Kenneth W. Branton, Moody AFB, Chief of Bioenvironmental Engineering

6. Ms. Nancy J. Manley, Moody AFB, Chief of Environmental and Contract Planning

7. Mr. J. B. DeVane, Moody AFB, Contract Administrator

E. METHODOLOGY

The methodology utilized in the Moody AFB records search is shown graphically on Figure 2 (page VIII-2). First, a review of past and present industrial operations was conducted at the base. Information was obtained from available records such as shop files and real property files, as well as interviews with past and present base employees from the various operating areas of the base. The information obtained from interviewees on past activities was based on their best recollection. A list of 43 interviewees from Moody AFB, with areas of knowledge and years at the installation, is given in Appendix C.

The next step in the activity review process was to determine the past management practices regarding the use, storage, treatment, and disposal of hazardous materials from all the industrial operations on the base. Included in this part of the activity review was the identification of past landfill sites and burial sites; as well as other possible sources of contamination such as major PCB or solvent spills, or fuel-saturated areas resulting from significant fuel spills or leaks.

An aerial overflight and a general ground tour of identified sites was then made by the records search team to gather site-specific information including evidence of environmental stress and the presence of nearby drainage ditches or surface-water bodies. These water bodies were inspected for any evidence of contamination or leachate migration.

A decision was then made, based on all of the above information, as to whether a potential existed for hazardous material contamination from any of the identified sites. If not, the site was deleted from further consideration. Minor operations and maintenance deficiencies were noted during the investigations and were made known at the outbriefing.

For those sites at which a potential for contamination was identified, the potential for migration of this contamination was evaluated by considering site-specific soil and ground-water conditions. If there was no potential for contaminant migration, but other environmental concerns were identified, the site was referred to the base environmental monitoring program. If no further environmental concerns were identified, the site was deleted from consideration. If the potential for contaminant migration was identified, then the site was rated and prioritized using the site rating methodology described in Appendix D, "Hazard Assessment Rating Methodology."

The site rating indicates the relative potential for adverse environmental impact at each site. For those sites showing a significant potential, recommendations were made to quantify the potential contaminant migration problem under Phase II of the Installation Restoration Program. For those sites showing a low potential, no Phase II work was recommended.

II. INSTALLATION DESCRIPTION

II. INSTALLATION DESCRIPTION

A. LOCATION

Moody AFB is located on 5,160 acres of land in Lowndes and Lanier Counties in south-central Georgia. Nearby towns include Valdosta, about 10 miles to the southwest, and Lakeland, about 6 miles northeast (Figure 3, page VIII-3). The closest large cities include Atlanta, Georgia, 234 miles to the north, and Jacksonville, Florida, about 120 miles to the southeast. Georgia State Highway 125 is the access road to Moody AFB, and U.S. Interstate Highway 75 passes about 10 miles to the west of the base. The current base boundaries are shown on Figure 4 (page VIII-4).

B. ORGANIZATION AND HISTORY

Moody AFB was established in 1941 as an advanced pilot training school for Army Air Corps cadets. The original base boundaries included over 9,000 acres of land acquired by use permit from the United States Department of Agriculture (USDA) and by lease (Figure 5, page VIII-5). The base was named in honor of Captain George Moody who was a test pilot for the first AT-10, a twin-engine trainer used at Moody AFB during World War II. During the war, the base population exceeded 40,000 officers, airmen, and cadets.

In 1946, following the end of World War II, Moody AFB was placed on inactive status until it was reopened in 1951 after the outbreak of the Korean conflict. From that time until 1975, Moody AFB was primarily involved in pilot training under the Air Training Command (ATC), with pre-flight, primary, and basic pilot training programs. In late 1975, ATC deactivated the 38th Flying Training Wing at Moody AFB and the base was reassigned to Tactical Air Command (TAC) and the 347th Tactical Fighter Wing (TFW).

Today the 347th TFW's mission is to deploy overseas during wartime commitments in support of U.S. or allied ground forces. This mission is fulfilled by three Tactical Fighter Squadrons, the 68th, 70th, and 339th, using F-4E Phantom II aircraft. A total of 72 of these aircraft are assigned to Moody AFB. The work force presently at Moody AFB numbers approximately 4,000, of whom 3,300 are military personnel and 700 are civilian employees. The major organizations and missions assigned to Moody AFB are listed below:

- 347th Tactical Fighter Wing
- 68th, 70th, and 339th Tactical Fighter Squadrons
- 347th Combat Support Group and Squadrons
- USAF Hospital Moody
- Detachment 23, 3rd Weather Squadron
- 1878th Communications Squadron
- Detachment 322, 3751st Field Training

A more detailed description of the base history and its mission is included in Appendix E.

Air Force-controlled property at Moody AFB is a fairly complex arrangement of ownership, permit use, leases, and easements. Figure 5 (page VIII-5) illustrates the historical extent of the base boundaries as originally organized in 1941 and expanded through 1950. Since that time a number of large land parcels have been relinquished including nearly 5,900 acres transferred back to the U.S. Department of Agriculture. Base property at the present time includes: owned (1,565 acres), use permit--USDA (3,595 acres), and

easements (401 acres). Off-base sites include Grassy Pond Annex and the GATR site (approximately 500 acres of fee-owned property) and the Whitehouse Tower and Cross City Tower sites where the Air Force owns and operates radar towers constructed for aircraft altitude determination.

III. ENVIRONMENTAL SETTING

III. ENVIRONMENTAL SETTING

A. METEOROLOGY

The climate of Moody AFB is classified as humid subtropical. This results from the relatively low latitude (approximately 31° north latitude) and the proximity of the Gulf of Mexico (80 miles) and the Atlantic Ocean (100 miles). These water bodies help to produce a climate that is typified by long, humid summers with frequent convectional storms, and short, mild winters interrupted by frontal storm systems and infrequent cold snaps. The spring and fall seasons are generally short and mild.

The average annual temperature for Moody AFB is 68°F (Table 2) and monthly mean temperatures vary from 52°F in January to 82°F in July and August. The average daily maximum in July is 91°F while the highest recorded temperature in 30 years of record is 104°F in June. On the average there are 73 days per year with maximum temperatures greater than 90°F. The average daily minimum temperature in January is 42°F while the lowest recorded temperature at Moody AFB is 9°F. The average number of days with freezing temperatures is 17 per year.

Mean annual precipitation recorded at Moody AFB is 47.0 inches. This rainfall is well distributed throughout the year, although summer is generally the wettest season and fall is the driest. Summer rainfall is often poorly distributed over the base due to the localized nature of thundershower activity, although showers will occur on or in the vicinity of the base nearly every afternoon in July and August. Lake evaporation at Moody AFB is estimated to be between 40 and 45 inches per year. Evapotranspiration over land areas may be greater or less than this depending on vegetative cover type.

Table 2
METEOROLOGICAL DATA SUMMARY FOR MOODY AFB, GEORGIA[a]

Parameter	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Temperature (°F)													
Mean	52	55	61	69	75	80	82	82	79	69	60	54	68
Average Daily Maximum	61	64	71	79	85	89	91	90	87	79	70	63	77
Average Daily Minimum	42	45	51	59	65	71	73	73	70	59	50	44	59
Highest Recorded	82	86	88	95	99	104	103	100	98	94	90	83	104
Lowest Recorded	13	18	22	39	44	54	64	63	42	34	19	9	9
Precipitation (inches)													
Mean	3.3	4.0	4.7	3.9	3.9	4.3	6.2	5.4	3.4	2.0	2.6	3.3	47.0
Maximum	8.0	8.3	11.1	11.6	11.3	11.7	11.2	15.5	9.0	5.2	5.6	7.5	15.5
Minimum	0.5	1.5	0.9	0.4	0.6	0.8	1.6	1.3	0.1	T[b]	0.1	1.0	T
Relative Humidity (%)													
Mean	69	63	64	64	68	71	72	74	72	67	68	68	68
Surface Winds (knots)													
Mean	5	5	5	5	4	3	3	3	3	4	4	4	4
Maximum	44	49	48	52	51	65	45	48	46	44	41	39	65
Prevailing Direction	WNW	N	SSW	SSW	W	WSW	W	E	ENE	NE	N	N	E

Source: United States Air Force, Moody AFB, Georgia, Detachment 23, 3rd Weather Squadron.

[a] Period of Record: 1951-1981.

[b] T denotes less than 0.05 inch.

An average of 58 thunderstorms per year are recorded at Moody AFB. Extreme storm events, sometimes accompanied by tornados, occur occasionally in the area; and tropical storms accompanied by several days of heavy rains occur with a frequency of about 1 in 5 years. Maximum rainfall recorded in a 24-hour period is 5.6 inches.

Relative humidity at Moody AFB is generally high with an annual average of 68 percent. Highest humidities are recorded in the early morning with an average at dawn of 83 percent. The average humidity at midday in spring is generally less than 50 percent; and during the rest of the year it averages 54 percent. Mean cloud cover is approximately 60 percent during the summer and 50 percent in winter. On the average, some fog is encountered at Moody AFB on 185 days per year.

Wind speed at Moody AFB averages only 4 knots; however, a maximum wind speed of 65 knots has been recorded. Wind direction is generally from the north during the winter, from the west during the spring and early summer, and from the east during the late summer and fall.

B. GEOLOGY

1. Physiography

Moody AFB is located in the Coastal Terraces region of the Atlantic Coastal Plain physiographic province. This region is characterized by flat to sloping plateaus separated by shallow river valleys, broad wetland depressions, and karst topography.

The base facilities are located on a level plateau between the Withlacoochee River on the west and the Alapaha River on the east (Figure 3, page VIII-3). The eastern

portion of the base is located in a low area known as Grand Bay Swamp. Land surface elevations on Moody AFB vary from approximately 190 feet above mean sea level (msl) on the eastern portion to about 240 feet above msl near the center of the base (Figure 6, page VIII-6). Slopes range from 0 to 5 percent. The ground-water table is generally 10 to 20 feet below the ground surface.

2. Soils

On the high-ground western portion of the base, the surface soils are mostly in the Tifton series (Figure 7, page VIII-7). The soil profile consists of about 2 to 5 feet of well-drained, moderately permeable loamy fine sands overlying less permeable sandy clays and clayey sands. Permeabilities of the surficial fine sands are moderate to high, ranging from 10^{-4} to 10^{-2} centimeters per second. Permeabilities of the underlying sandy clays are moderate to low, ranging from 10^{-4} to 10^{-6} centimeters per second.

On the eastern portion of Moody AFB, in the Grand Bay Swamp area, the surface soils are classified in the Dasher series and are poorly drained organic soils formed in association with wetland plant communities. The water table is generally near the ground surface.

3. Geology

A typical stratigraphic section of Moody AFB is shown on the schematic on Figure 8 (page VIII-8). In general, the stratigraphy consists of a few feet of sandy deposits of Recent, Pleistocene, and Pliocene age overlying successively older formations including, from youngest to oldest, the Miccosukee, Hawthorn, Suwannee, Ocala, Claibourne, and Wilcox Formations. Each of these formations is essentially flat-lying.

The Miccosukee Formation crops out along the western edge of the base west of Highway 125 (see Figure 9, page VIII-9). The Miccosukee Formation dates back to the late Miocene epoch and is composed of yellow to red-brown clayey sand, clay, silt, and gravel. Deposition of this formation was continental to near-shore marine. On the eastern portion of the base, sands and gravels of Pliocene to Pleistocene age lie unconformably on the Miccosukee, acting hydraulically with the Miccosukee as a single unit. The Miccosukee Formation and the Pliocene and Pleistocene deposits attain a maximum thickness of about 100 feet.

Underlying the Miccosukee Formation at Moody AFB is the Hawthorn Formation which is approximately 150 feet thick at this location. The Hawthorn (Miocene age) consists of clay, claystone, sand, limestone, and marl, and is locally cherty and commonly phosphatic. The upper part of the formation is made up of clastics while the lower part is a brown cherty, sandy limestone that is highly permeable. This lower unit generally ranges from about 20 to 60 feet in thickness.

The top of the Suwannee limestone (Oligocene age) is found at about 200 feet below ground surface at Moody AFB. This unit is a highly permeable section formed from extensive weathering of the Oligocene deposits before deposition of the Miocene beds. The Suwannee Formation is a yellow to white fossiliferous, porous, crystalline limestone which is approximately 100 to 200 feet thick.

Beneath the Suwannee limestone is the Ocala limestone of early Eocene age. The top of this formation is approximately 340 feet below land surface (bls) at Moody AFB, and its thickness at this point is about 350 feet. This limestone is cream to white in color, is fossiliferous, and contains abundant interbedded dolomite. This formation

has well developed primary and secondary permeability, including large solution cavities and caverns. Subsurface permeability is generally greatest at the erosional interface with the overlying Suwannee limestone.

Underlying the Ocala limestone are up to 2,000 feet of marine sedimentary deposits of the Claiborne and Wilcox groups.

Water wells in the Moody AFB area very rarely penetrate below the upper part of the Ocala because ample ground water is found in the Suwannee and Ocala deposits.

C. HYDROLOGY

1. Surface-Water Hydrology

Moody AFB lies between the Withlacoochee and Alapaha Rivers which flow south from Georgia into Florida. Drainage from this area is ultimately to the Gulf of Mexico by way of the Suwannee River in Florida. The western portion of the base drains to the westerly-flowing Beatty Creek which enters Cat Creek and finally the Withlacoochee River about 10 miles north of Valdosta. Treated effluent from the base sewage treatment plant is discharged to Beatty Creek and, during dry periods, is reported to provide most of the flow in this drainageway. The eastern portion of Moody AFB drains into Grand Bay, which is the headwater of Grand Bay Creek, ultimately flowing into the Alapaha River near Jennings, Florida.

Surface-water features on Moody AFB are shown on Figure 6 (page VIII-6). These include Mission Lake, a 31-acre impoundment south of the runway area; a small golf course pond; drainage ditches and storm drains in the runway area; seasonally wet areas of Grand Bay on the eastern

portion of the base; and part of Shiner Pond at the northeast corner of the base. A large cypress-dominated area known as Banks Lake is located off-base northeast of Shiner Pond.

2. Ground-water Hydrology

Ground water occurs under water table or perched water table conditions in the deposits of Miocene to Pleistocene age underlying Moody AFB. The water table is generally 10 to 20 feet below land surface (bls) in the western portion of the base and varies from the surface to 10 feet bls in the eastern portion. Water levels are expected to vary with the seasons in response to variations in rainfall. The surface of the water table is expected to follow the slope of the overlying topography; the direction of ground-water flow within the water table aquifer is therefore expected to follow the slope of the ground surface, as shown on Figure 6 (page VIII-6). Recharge to the water table aquifer is through direct rainfall infiltration, and discharge is primarily to local surface-water drainages. The water table aquifer is about 80 to 100 feet thick and is separated from the underlying principal artesian aquifer by a clay layer of relatively low permeability (less than 10^{-6} centimeters per second) about 50 feet thick. The clay confining layer is not completely impermeable and does allow some water to pass from the surficial water table aquifer to the principal artesian aquifer.

Sand and gravel beds within the water table aquifer yield small to moderate amounts of water; however, in the vicinity of Moody AFB, there are no known potable water supply wells in the water table aquifer.

Most water supply in the Moody AFB/Valdosta area is from the main water-bearing unit known as the principal artesian aquifer. This aquifer is located below a depth of about 150 feet and is comprised of the Claiborne Group, Ocala limestone, Suwannee limestone, and limestone units in the lower part of the Hawthorn Formation.

Figure 10 (page VIII-10) is a map showing the potentiometric surface of the principal artesian aquifer in the vicinity of Moody AFB in May 1975. The potentiometric surface can be used to predict the direction of ground-water flow. In general, ground-water movement within the principal artesian aquifer is towards the northeast. Rainwater, storm runoff, and stream flow all contribute to recharge of the principal artesian aquifer. Most of the recharge occurs where the aquifer outcrops in central and south Georgia. Recharge also occurs in areas with thin or missing overburden layers such as sinkhole ponds, permeable lake bottoms, and cavernous river channels. The closest substantial recharge of water to the aquifer occurs 8 miles southwest of Moody AFB along a section of the Withlacoochee River as shown on Figure 10 (page VIII-10). Some minor recharge to the aquifer is also expected to occur as vertical movement of water from the overlying water table aquifer because the water table is higher than the potentiometric surface of the aquifer.

Water levels in the principal artesian aquifer are declining in response to long-term withdrawals from the aquifer in the Valdosta area. In the 18-year period from 1957 to 1975, average ground-water levels declined by 8.2 feet in downtown Valdosta, or approximately 0.46 feet per year. Similar water level declines have also been documented in other wells in south-central Georgia.

There are 11 active wells on Moody AFB, each tapping the principal artesian aquifer. These wells have a combined capacity of approximately 2,700 gpm. The locations of the wells are shown on Figure 11 (page VIII-11). A summary of well construction details is given in Table 3. Figure 8 (page VIII-8) illustrates a representative stratigraphic log and some construction details for the three primary potable water supply wells at Moody AFB.

The potential for movement of contaminants to the water table at Moody AFB is high because recharge is directly from rainfall. Pollutants would likely travel vertically downward to the water table, then flow laterally to discharge to adjacent surface waters. The direction of flow would be similar to the direction of surface-water runoff shown on Figure 6 (page VIII-6).

The hydraulic connection between the water table aquifer and the principal artesian aquifer is poor due to the presence of a thick, low-permeability clay layer at a depth of about 100 to 150 feet; therefore, the potential for contaminants to enter the principal artesian aquifer and migrate to major potable water supply wells is low. There are no known direct hydraulic connections between the water table aquifer and the principal artesian aquifer within 8 miles of the base. It is possible that a direct hydraulic connection could occur around poorly constructed or faulty well casings.

A summary of the typical water quality of the principal artesian aquifer of this region is given in Table 4. Also shown is a representative water quality analysis for Moody AFB Wells No. 1, 2, and 3, and the applicable drinking water standards for comparison.

Table 3
WELL CONSTRUCTION DETAILS OF WATER WELLS AT MOODY AFB
AND GRASSY POND RECREATIONAL ANNEX

Well No.	Location	Depth (feet)	Casing Size (inches)	Capacity (gpm)	Remarks
1	Building 913	425	10	625	Potable--Main system
2	Building 946	425	12	625	Potable--Main system
3	Building 984	440	10	630	Potable--Main system
4	100 feet north of Building 205	345	6	250	Non-potable, air conditioning, currently not in use
5	Building 1116--Ordnance Area	250	6	180	Non-potable, fire protection
5A	40 feet west of Building 1112	150	6	100	Potable--Ordnance area
6	Building 1702--Former Jet Engine Test Cell	210	4	19	Non-potable--Fire protection
7	Building 1705--Mission Lake Recreation Area	195	4	10	Potable--Mission Lake Recreation Area
8	Golf Course	400	6	220	Non-potable--Golf course irrigation
9	Grassy Pond Recreational Annex	--	4	--	Potable
10	Grassy Pond Recreational Annex	--	2	--	Potable
11	Grassy Pond Recreational Annex	--	10	--	Irrigation supply
12	Building 1500--Transmitter Site	215	4	12	Potable--Transmitter site
13	Building 1501--Receiver Site	225	4	12	Potable--Receiver site

Note: Wells No. 9, 10, and 11 are located at Grassy Pond.

Table 4
WATER QUALITY CHARACTERISTICS OF THE PRINCIPAL
ARTESIAN AQUIFER IN THE VICINITY OF MOODY AFB

Parameter[a]	Average for Lowndes County[b]	Base Wells[c] No. 1	No. 2	No. 3	EPA and Georgia Drinking Water Standards
Arsenic	.005	<.01	<.01	<.01	.05
Cadmium	.002	<.01	<.01	<.01	.01
Chromium	.001	<.05	<.05	<.05	.05
Copper	.002	--	--	--	1.0
Lead	.003	<.02	<.02	<.02	.05
Mercury	.0001	<.002	<.002	<.002	.002
Selenium	.004	<.01	<.01	<.01	.01
Strontium	.086	--	--	--	5.0
Zinc	.021	<.05	<.05	<.05	--
Silica as SiO_2	27	37.6	36.0	33.2	--
Aluminum	.026	--	--	--	--
Iron	.028	0.1	<0.1	0.147	0.3
Manganese	.015	<.05	<.05	<.05	.05
Calcium	33	24.6	25.8	28.6	--
Magnesium	8.6	10.2	9.8	10.0	--
Sodium	3.5	2.9	2.8	2.7	--
Potassium	0.7	0.8	--	--	--
Alkalinity as $CaCO_3$	105	108	108	110	--
Hardness as $CaCO_3$	119	103	105	113	--
Sulfate as SO_4	14	17	20	27	250
Chloride	3.6	4	<1	<1	250
Fluoride	0.3	--	--	--	1.6
Nitrate	0.3	<0.1	<0.1	<0.1	10
Dissolved Solids	165	158	196	192	500
Specific Conductance (µmhos/cm)	244	--	--	--	--
Color (platinum-cobalt blue)	10	5	5	15	15

Source: Krause 1979, and USAF OEHL.

[a] Parameters are in mg/l unless otherwise indicated.

[b] Sampled 1974-1975.

[c] Sampled January 1982.

Water quality problems in some wells in the vicinity of Moody AFB arise from naturally high concentrations of sulfate, hydrogen sulfide, iron, and color. No water quality problems have been reported with the base water supply.

D. ECOLOGY

1. Habitat

Approximately 60 percent or 3,100 acres of Moody AFB is considered unimproved, indicating the presence of semi-natural to natural ecological conditions. Major habitats found on-base include upland pine forests, pine flatwoods, gum-bay-shrub swamps, and freshwater ponds.

There are 1,431 acres of managed forest lands on Moody AFB. The tree species that are planted and harvested by the U.S. Forest Service on the base are loblolly and longleaf pine. No timber management is practiced on approximately 1,600 acres of wetland habitat located in Grand Bay. This land has a mixture of plant species characteristic of shallow coastal plain wetland areas, including many evergreen shrubs and vines, sweetbay, black gum, pond pine, and cypress. An interesting component of this unmanaged area is Dudley's Hammock, a mesic hardwood hammock vegetated by magnolia and several species of oak and hickories. Although more common in north and central Florida, this plant association is unusual this far north.

Wildlife is abundant in the unimproved areas of the base. Common mammals include rabbits, squirrels (including fox squirrels), opossums, skunks, raccoons, deer, bobcats, and foxes. Over 100 species of birds are known to occur in the vicinity of the base. Deer hunting is currently allowed on the base and turkey and small game

populations are being encouraged for future hunting. The large swamp area east of the base is known as Grand Bay Wildlife Management Area and is open for public hunting for all game species.

Several aquatic habitats are present on Moody AFB, including Mission Lake, the unnamed golf course lake and Shiner Pond. These water bodies were formed by impounding water courses and are stocked with game fish for recreational activities. The most popular sport fish in this area are black bass, bluegill sunfish, and bullhead.

2. Threatened and Endangered Species

Table 5 lists the threatened and endangered plant and animal species reported to occur on or in the vicinity of Moody AFB. The American alligator is reported to reside in Mission Lake and adjacent wetland areas. Three sightings of Florida panthers have been reported from Moody AFB or its immediate vicinity in the past 10 years. An inactive southern bald eagle nest is present at Grassy Pond Annex and an active nest is located nearby at Pike Pond. Bald eagles probably feed at Banks Lake adjacent to Moody AFB. An inactive red-cockaded woodpecker colony has been reported from western Lowndes County; however, no breeding sites have been located on Moody AFB. The range of other protected species such as the indigo snake and peregrine falcon includes Moody AFB; however, there are no reported sightings from the base. Several species of threatened plant species are reported to occur in the wetland portions of the base, including the yellow, hooded, and parrot pitcher plants.

E. SUMMARY OF ENVIRONMENTAL SETTING

Moody AFB is located in the Atlantic Coastal Plain of south Georgia, approximately 10 miles northeast of Valdosta. The climate is generally warm and humid with an annual

Table 5
THREATENED AND ENDANGERED SPECIES OCCURRING WITHIN THE
VICINITY OF MOODY AFB, LOWNDES AND LANIER COUNTIES, GEORGIA

Common Name	Scientific Name	State[b]	Federal	Habitat
ANIMALS				
Florida Panther[a]	Felis concolor coryi	E	E	Large wooded tracts
Red-Cockaded Woodpecker	Picoides borealis	E	E	Mature pine forests
Peregrine Falcon	Falco peregrinus	E	E	Occasional migrant
Southern Bald Eagle[a]	Haliaeetus leucocephalus	E	E	Wetland areas
American Alligator[a]	Alligator mississippiensis	E	T	Swamps and lakes
Indigo Snake	Drymarchon corais couperi	T	T	Sandhills and flatwoods
PLANTS				
Water-Milfoil	Myriophyllum laxum	T		Shallow freshwater pools
Cow-Bane	Oxypolis canbyi	T		Bogs and wet areas
Yellow Pitcher-Plant[a]	Sarracenia flava	T		Bogs and wet flatwoods
Hooded Pitcher-Plant[a]	Sarracenia minor	T		Bogs and wet flatwoods
Parrot Pitcher-Plant[a]	Sarracenia psittacina	T		Bogs and wet flatwoods
Sweet Pitcher-Plant	Sarracenia rubra	E		Bogs and wet flatwoods
Schizachyrium	Schizachyrium niveum	T		Open sandy woods

Source: Georgia Department of Natural Resources.

[a]This species has been reported from Moody AFB or the Grassy Pond Annex.

[b]E = Endangered; T = Threatened.

average temperature of 68°F and an annual average rainfall of 47 inches. Located approximately 200 feet above msl, Moody AFB occupies a plateau between the Withlacoochee and Alapaha Rivers. The western portion of the base is located on fine sandy clay soils and the eastern portion consists of extensive wetland organic soils. Shallow ground water occurs generally from 10 to 20 feet deep on the western portion of the base and from 0 to 10 feet on the eastern portion. This shallow ground-water zone is not used locally as a water supply source. All known water supply wells in the area are developed in the principal artesian aquifer at depths between 150 and 400 feet. Unimproved areas at Moody AFB include surface-water impoundments, managed pine forest lands, a hardwood hammock area (Dudley's Hammock), and forested wetlands. Several threatened or endangered plant and animal species have been reported from the extensive natural areas at Moody AFB.

IV. FINDINGS

IV. FINDINGS

A. ACTIVITY REVIEW

1. Summary of Industrial Waste Disposal Practices

The majority of industrial operations at Moody AFB have been in existence since the early 1940's. The base was deactivated after Word War II and not reopened until 1951. Industrial operations were not conducted and therefore related wastes were not generated during those years.

The major industrial operations have included pneudraulic, engine, aerospace ground equipment (AGE), corrosion control, and wheel and tire maintenance shops. These industrial operations have generated varying quantities of waste oils, fuels, solvents, and cleaners. The total quantity of these industrial wastes ranged from 25,000 to 50,000 gallons per year.

Standard procedures for past and present industrial waste disposal at Moody AFB, based on the reports or best recollection of interviewees, are as follows:

- 1941-1946; 1951-1955: Industrial wastes from most base operations, including waste oils, fuels, solvents, paints, and paint thinners, were collected in drums and used in fire department training exercises near Mission Lake (Site No. 6). Waste solvents that were used at the aircraft or vehicle washracks were washed down the storm drains leading to Mission Lake. Likewise, small quantities of waste oils, hydraulic fluids, and solvents were dumped down floor drains and storm drains or were flushed down the sanitary sewer.

Some waste paint products were disposed of in cans or drums at the base sanitary landfill along Burma Road near Mission Lake (Site No. 1).

- 1955 to 1975: In 1955, the fire department moved its training area to the area east of the runway, and the sanitary landfill operations were moved to the southwest corner of the base (Site No. 3). Although waste oils, fuels, and solvents were still accepted by the fire department, the quantities used in training exercises were reduced; some containerized wastes were taken to salvage for further disposition. In 1962, an oil/water separator was installed at the Refuel Shop, Building No. 769, discharging to the sanitary sewer. In addition, underground holding tanks were installed during the 1960's at several locations around the base for temporary storage of waste oils, hydraulic fluids, and fuels. Contractors were retained to pump out these oil/water separators and holding tanks and to remove the waste materials from the base. This was the common practice for disposal of most waste POL at Moody AFB under Air Training Command.

- 1975 to Present: In 1975, extensive modifications to the industrial waste treatment system were constructed. Oil/water separators were connected to the sanitary sewer.

  At the end of 1975, the fire department opened the newest of its training areas east of the runway and began using only contaminated JP-4 fuel in exercises. When the base was turned over to Tactical Air Command late in 1975, the storage of wastes at each shop in underground tanks was gradually phased out. Wastes, including oils,

hydraulic fluids, fuels, solvents, paints and thinners, and cleaning compounds are now primarily containerized in 55-gallon drums which are taken to DPDO for further disposition. Each shop is responsible for transporting waste drums to the DPDO storage yard. Since 1981, waste paints, paint thinners, and paint strippers generated in the corrosion control paint barn (Building No. 717) have not been collected by contractors, but have been pumped at a controlled rate into the sanitary sewer. Contractor removal of wastes is still used for emptying the oil/water separators and their associated holding tanks. A 2,000-gallon underground tank located near Building No. 552 is used to store the collected wastes prior to final disposition through DPDO.

Contaminated fuels generated on the flightline are either containerized in drums and taken to DPDO or are drained into an underground storage tank operated by the Fuels Management Branch. The drain area consists of a concrete pad that is sloped to a drain in the center. Fuels are collected in a 5,000-gallon steel underground fuel storage tank located west of Building No. 788 and reclaimed.

2. Industrial Operations

The industrial operations at Moody AFB are primarily involved in the routine maintenance of F-4 aircraft. Corrosion control activities, originally concerned with only component and touch-up painting, now include stripping and painting of entire aircraft. Approximately four aircraft per month are currently serviced at Moody AFB. Appendix F contains a master list of the industrial operations.

A review of base records and interviews with past and present base employees resulted in the identification of the industrial operations where the majority of industrial chemicals have been handled and hazardous wastes have been generated. Table 6 summarizes the major industrial operations and indicates the estimated quantities of wastes generated as well as the past and present disposal practices of these wastes, i.e., treatment, storage, and disposal. This information has been obtained from shop files and interviews with shop personnel based on their best recollection. Descriptions of the major industrial activities are included in the following paragraphs.

a. 347 Transportation Squadron

i. Vehicle Maintenance

The General Purpose Vehicle Maintenance Shop is located in Building No. 977, having moved there in 1962 from Building No. 903. Routine minor maintenance and major overhauls, from oil changes to body work, are performed on gasoline-powered vehicles. Wastes generated include about 1,000 to 1,300 gallons per year of mixed POL, including engine oils, grease, antifreeze, and hydraulic fluids. Originally these wastes were taken to the fire department training area and burned in fire training exercises (Sites No. 6 and 7). When the present building was constructed in 1962, a 500-gallon underground holding tank was installed for storage of this POL waste which was removed periodically by a contractor. Since about 1981, POL wastes have been collected in drums and taken to DPDO for proper disposal; the underground tank has been padlocked and is inactive, but is reported to still contain waste oils.

Table 6
MAJOR INDUSTRIAL OPERATIONS SUMMARY

Shop Name	Location (Bldg. No.)	Waste Material	Estimated Waste Quantity	Treatment/Storage/Disposal Methods (1940 – 1950 – 1960 – 1970 – 1980)
347th Transportation Squadron				
Vehicle Maintenance	977	Engine oil, Grease, Antifreeze, Hydraulic Fluid	1,000-3,000 gal/yr	Fire dept.[a]; Contractor removal; DPDO[b]
		PD 680	240 gal/yr	
Paint	904	Paint, Thinners	330 gal/yr	Fire Dept.[a] or landfill; DPDO[b]
347 TFW/CRS				
Battery/Electrical	785	Lead acid	240-360 gal/yr	Neutralized to ground surface
		Ni/Cd battery fluid	30-40 gal/yr	To sanitary sewer
		Lubricating oil	60 gal/yr	Combined with pneudraulic shop wastes
NDI Lab	702	Penetrant	108 gal/yr	DPDO[b]
		Emulsifier	110 gal/yr	Silver recovery; sanitary sewer
		Fixer	120 gal/yr	
Pneudraulics	785	PD 680	200-400 gal/yr	Fire dept.[a]; DPDO[b]
		Hydraulic fluid	55 gal/yr	
Small Gas Turbine	758	Engine Oil, Hydraulic fluid	660 gal/yr	Fire dept.[a] or DPDO[b]; DPDO[b]
		PD 680, TCE, Carbon remover, Fingerprint remover	660 gal/yr	Fire dept.[a] or storm drain; Contractor disposal; DPDO[b]
		JP-4	2,600-3,000 gal/yr	Fire dept.[a]; Fire dept.[a] or DPDO[b]; DPDO[b]
		Nitric acid, Alkaline solution	1,200-1,600 gal/yr	Contractor disposal; Sewage treatment plant
		Alkali permanganate	600-800 gal/yr	

Table 6--Continued

Shop Name	Location (Bldg. No.)	Waste Material	Estimated Waste Quantity	Treatment/Storage/Disposal Methods
347TFW/EMS				
AGE	755	Hydraulic fluid	660 gal/yr	Fire dept.[a] → DPDO[b]
		Engine oil	2,000 gal/yr	
		PD 680	660 gal/yr	
		PD 680	2,000 gal/yr	Storm drain; o/w separator at AGE washrack → To sanitary sewer
Armament Systems Maintenance	700	PD 680	1,320 gal/yr	DPDO[b]
Corrosion Control	717	Paint strippers	60,000 gal/yr[c]	Storm drain → Contractor removal → Controlled discharge to sanitary sewer
		Thinners		
		Mixed paints	660 gal/yr	DPDO[b]
	Washrack	PD 680	1,300-2,500 gal/yr	Storm drain → To sanitary sewer
Egress				
	785	Paints	440 gal/yr	Storm drain → DPDO[b]
		Thinner		
Fuel Systems	788	PD 680	60 gal/yr	o/w separator to sanitary sewer; Taken to aircraft washracks
		JP-4		
Phase Docks/Wheel & Tire	718	Paint Stripper	660 gal/yr	Fire dept.[a] → DPDO[b]
		PD 680	660 gal/yr	
		Hydraulic fluid	440 gal/yr	
		JP-4	440 gal/yr	Fire dept.[a] → Fuels management branch[d]

[a]Wastes placed in 55-gallon drums and taken to the fire department training areas for use in fire training exercises.

[b]DPDO = Defense Property Disposal Office; previously designated Redistribution and Marketing or Salvage. Wastes placed in 55-gallon drums and taken to central storage yard for resale, recycle, or disposal.

[c]Includes washwater.

[d]5,000-gallon underground contaminated fuel tank operated by Fuels Management Branch and located near Building No. 788; fuel is reclaimed.

A 30-gallon cleaning vat containing PD 680 dry cleaning solvent is used for cleaning miscellaneous parts in the shop. The vat is emptied approximately every 90 days and the waste PD 680 is placed in drums and taken to DPDO for proper disposal.

Originally, the vehicle washrack facility was located in Building No. 973 and discharged directly to storm drainage; in 1975, the washrack was connected to the sanitary sewer. A new facility was completed in 1982 which includes an oil/water separator with connection to the sanitary sewer. Vehicles are washed using an aircraft cleaning compound; no solvents or degreasers are reportedly used at the washrack.

ii. Vehicle Painting

The motor pool paint shop is located adjacent to the Vehicle Maintenance Shop in Building No. 904. Approximately one 55-gallon drum of mixed paints and paint thinners is generated every 2 months and is taken to DPDO for proper disposal. Prior to about 1975, these paint wastes were primarily used in fire department training exercises, or disposed of through salvage. Some paint wastes may also have been disposed of in base landfills.

b. 347 Component Repair Squadron

i. Battery/Electrical

The Battery/Electrical shop is currently in Building No. 785, having moved there in 1966 from Building No. 718. The shop handles both lead acid and nickel/cadmium batteries. Battery acid from the lead acid batteries is emptied into small tanks, where it is neutralized with baking soda and poured onto the ground

outside the shop. About 20 to 30 batteries are emptied each month. Battery fluid from the nickel-cadmium batteries is poured down a sink drain connected to the sanitary sewer. About 25 batteries containing about a pint of fluid each are disposed of each month. Small quantities (5 gal/mo) of waste motor oil are also generated in the shop; the waste oil is stored in drums that are taken to DPDO for proper disposal.

ii. Non-Destructive Inspection (NDI)

The NDI lab was located in Building No. 718 from 1968 to 1972; in 1972 it was moved to Building No. 702. The NDI lab handles small quantities of hazardous materials, most of which are consumed in the laboratory. Waste penetrant and emulsifier (about 110 gal/yr of each) are placed in drums and disposed of through DPDO. About 120 gallons per year of fixer solution is also disposed of each year to the sanitary sewer, following silver recovery. The NDI lab handles silver recovery for the base photo lab and the hospital (medical/dental x-ray).

iii. Pneudraulics

The pneudraulics shop was also located in Building No. 718 prior to 1966 when it moved into Building No. 785. The shop includes a 200-gallon heated cleaning vat containing PD 680 which is emptied every 6 to 12 months. The waste PD 680 is placed in drums and taken to DPDO for disposal. Small quantities (55 gal/yr) of hydraulic fluid are generated which are also placed in drums and disposed of through DPDO. Prior to the mid-1970's, the waste solvent and hydraulic fluid were primarily used in fire department training exercises (Sites No. 6 and 7), although some wastes may have been disposed of in the base landfills (Sites No. 1, 2, and 3).

iv. Small Gas Turbine

The engine shop (currently the small gas turbine shop), located in Building No. 609 from 1941 to 1955 and in Building No. 718 from 1956 to 1963, has been located in Building No. 758 since 1963.

The shop currently services about four engines each month, generating about 660 gallons per year of waste engine oil and hydraulic fluid, about 660 gallons per year of waste solvents (including PD 680, TCE, carbon remover, and fingerprint remover) and about 3,000 gallons per year of contaminated fuel. These wastes are disposed of by placing them in 55-gallon drums and taking them to DPDO for further disposal. In the shop, the cleaning solvents are used in small vats varying in capacity between 5 and 25 gallons. Minor cleaning of parts is currently performed at the aircraft washrack near Building No. 758.

Prior to 1975, parts cleaning was accomplished in a series of six large vats of about 600 to 800 gallons each. Three of these vats contained water for rinsing, one contained an alkaline solution, one contained potassium permanganate, and one contained nitric acid. Generally, few wastes were generated; chemicals were added as needed to the vats to keep them full. Periodically, however, the contents of the vats would be changed by draining the waste solutions into an underground tank which was later pumped out by a contractor. Some interviewees reported that occasionally the vat contents may have been discharged to the storm drain; however, this was not considered standard practice. One interviewee reported that in 1972 or 1973 the seal broke in the permanganate tank and the solution drained into Mission Lake; the lake reportedly turned purple, but the spill did not result in a fishkill.

In 1975, use of these vats was discontinued and the contents were placed in drums and taken to the base sewage treatment plant where they were gradually fed into the plant influent.

Smaller vats of about 50 to 100 gallons containing PD 680 and TCE were also in use prior to 1975. These vats reportedly overflowed periodically, spilling their contents into the storm drainage system leading to Mission Lake. Standard procedure for disposing of wastes from these vats was also by draining them into the underground tank for contract removal; however, occasionally the contents were placed in drums and taken to salvage or poured down the storm drain. In 1975, because of the mission change from ATC to TAC, the vats were no longer needed and the contents were placed in drums, taken to the sewage treatment plant, and fed into the plant influent.

A small cadmium plating facility was also located in the engine shop prior to 1975. No known wastes were generated by this process. In 1975, the remaining cadmium cyanide (estimated at between 50 and 200 gallons) was collected by a contractor and removed from the base.

c. 347 Equipment Maintenance Squadron

i. Aerospace Ground Equipment (AGE)

The powered AGE shop is located in Building No. 755, built in 1962. The AGE shop generates waste hydraulic fluid (660 gal/yr), engine oil (2,000 gal/yr), and PD 680 (660 gal/yr) which are stored in 55-gallon drums and taken to DPDO for disposal. Prior to 1975, these POL wastes were taken to the fire department training area and used in training exercises.

An oil/water separator was installed at the AGE washrack in 1977 with connection to the sanitary sewer. Previously, the washrack drained directly to the storm drain. Approximately 2,000 gallons per year of PD 680 and 660 gallons per year of aircraft cleaning compound are used at the washrack.

ii. Armament Systems Maintenance

Armament Systems Maintenance is performed in the gun shop, Building No. 700. Two vats containing about 10 gallons of PD 680 each are used for cleaning parts. Contaminated PD 680 (about 1,320 gal/yr) is placed in drums and taken to DPDO for disposal. A 3,000-gallon underground holding tank located near Building No. 700 was designed to hold the waste PD 680, but has become filled with water and is not used.

iii. Corrosion Control

Prior to 1968, activities were conducted at two shops, one at Building No. 718 and the other in the same location as Building No. 621. Corrosion control activities are currently conducted in the Paint Barn, Building No. 717, built in 1968. Waste paint residue, strippers, and thinners have been washed down a floor drain into a 10,000-gallon underground holding tank. Contractors were retained to pump out the tank and dispose of the wastes off-base. In 1981, a pump was installed to pump the tank contents into the sanitary sewer at a controlled release rate of 2 gallons per minute.

After a painting operation is finished, surplus paint is currently dumped into 55-gallon drums that are sealed and taken to DPDO for disposal. In the past, these paints may also have been disposed of along with the mixed paints, strippers, and thinners in the holding tank,

and small quantities have been dumped down the storm drain. Some waste paints in drums were also taken to the base landfills for disposal.

Since the 1940's, aircraft washracks have been located at several locations along the flightline: near Buildings No. 658, 608, 609, 701, and 758. Aircraft cleaning compounds, PD 680, TCE, oils and greases, and jet fuel were used and/or disposed of at the washracks, and were washed down the storm drain. The storm drainage along the flightline is collected in lateral drains and conveyed to Mission Lake, Grand Bay, and Beatty Creek. The washrack at Building No. 758 discharges to the sanitary sewer and most corrosion control activities conducted since 1968 have been done at this washrack.

iv. Egress

Component corrosion control activities are conducted in the Egress shop in Building No. 785. Prior to 1966, these activities were performed in the corrosion control shop, Building No. 718. Approximately 440 gallons per year of waste paints and thinners are currently generated which are placed in drums and taken to DPDO for disposal. Prior to 1966, the wastes were combined with the corrosion control shop wastes for disposal.

v. Fuel Systems

The fuel systems shop, previously in Building No. 768, has been located in Building No. 788 since 1980. Small quantities (60 gal/yr) of waste PD 680 and JP-4 fuel are disposed of through an oil/water separator connected to the sanitary sewer. Prior to 1980, the wastes were disposed of in conjunction with other wastes generated at Building No. 718.

vi. Phase Docks/Wheel and Tire

The phase docks and wheel and tire shops have been located in Building No. 718 since the 1940's. The shop currently contains three 20-gallon vats containing PD 680 and one 20-gallon vat containing heated paint remover for dipping wheels. Typical wastes include paint stripper (660 gal/yr), PD 680 (660 gal/yr), and hydraulic fluid (440 gal/yr) which are placed in drums and taken to DPDO. Prior to about 1976, these wastes may also have been taken to the fire department training areas and used in training exercises. Wastes were also frequently dumped down the storm drain at the aircraft washrack. About 440 gallons of contaminated JP-4 fuel is also disposed of each year. Currently, these wastes are taken to the 5,000-gallon underground tank operated by the Fuels Management Branch near Building No. 788 and reclaimed. Prior to 1976, the waste fuels were probably disposed of at the fire department training areas.

d. 347 Aircraft Generation Squadron (AGS)

The AGS operates primarily out of Buildings No. 701, 770, and 772 along the flightline, performing only minor repairs and spot cleaning of aircraft. Waste POL generated by the AGS units are routinely taken to the nearest EMS or CRS shops for collection and disposal; these wastes amount to less than 50 gallons per year. A collection drum was located outside Building No. 770 in 1981; the drum is seldom used and has not yet been emptied. Fuels drained from aircraft are transported by small bowsers to the 5,000-gallon underground tank operated by the Fuels Management Branch near Building No. 788.

3. Fuels

There are two principal fuel storage areas at Moody AFB. The main POL area is located at the western end of the flightline at Facility 5016. The bulk fuel storage area includes four aboveground tanks and 14 underground tanks. The aboveground tanks are diked and contain JP-4 fuel, having a combined capacity of 1.3 million gallons. The underground tanks are all 25,000-gallon capacity and are part of an old aqua system that was abandoned in 1953. Twelve of the underground tanks have been "pickled" with caustic solution and are inactive. Two of the underground tanks are active and contain JP-4.

The active tanks are cleaned about once every 3 years. The quantities of residue generated during a cleaning operation are small, approximately 50 gallons. The residue was taken to the southwest landfill area and allowed to weather. Prior to about 1962, one of the aboveground tanks contained leaded AVGAS. Weathered sludge from that tank was placed in a small underground concrete tank at the existing POL area. The location of the tank is marked with a sign saying "Lead Sludge Buried Here." This is the only area at the base which has reportedly been used for burial of leaded AVGAS sludge.

The north POL area is located at Facility 8151, north of the main base, and consists of four 25,000-gallon underground tanks. These tanks were also part of an old aqua system and were used to store AVGAS until the early 1970's. The tanks currently store diesel fuel.

Aircraft wing tanks and bowsers containing JP-4 drained from aircraft are transported to a 5,000-gallon underground steel tank where the residual JP-4 is collected for reuse. After testing, the JP-4 is filtered and reused

in aircraft or used in ground equipment. The fuel reclamation storage tank is located on an abandoned runway approximately 150 yards west of Building No. 788 (Fuels System Shop) and has been in use since 1976. Other fuel storage tanks containing diesel fuel, heating oil, and MOGAS are located at several areas throughout the base. An inventory of POL storage tanks, including location, capacity, and type of POL stored, is included in Appendix G.

No reports of leaky tanks, major fuel spills, or fuel-saturated areas were found during the records search. However, a small stand of young pine trees behind the north POL area were observed to be dead or dying. Although the cause of the distress could not be ascertained during the records search, the distressed trees were all located downgradient of two drainpipes from the POL tanks, suggesting that the deaths may be due to fuel saturation. No fuel odors were detected in the surface soils.

There are 16 known deactivated storage tanks at Moody AFB. The location, capacity, and type of POL which may have been stored in these tanks are summarized in Appendix H. While most of the tanks have been "pickled" and contain a mixture of caustic soda and water, some tanks have been deactivated or abandoned without pickling. Oily contents have been reported in the tanks near Buildings No. 717, 718, and 700.

4. Fire Department Training Activities

Fire department training activities have been common at Moody AFB. In general, the exercises were conducted in cleared, circular, earthen-bermed areas containing mock aircraft. Prior to 1975, POL wastes were used in the exercises. These wastes were stored in 55-gallon drums prior to the exercises. Since 1975, only

non-contaminated JP-4 has been used. Most of the POL wastes would have been consumed in the fires; however, some minor percolation into the ground may have occurred. Prior to about 1960, protein foam and water were used to put out the fires. Since then, an agent referred to as Aqueous Film-Forming Foam (AFFF) has been used in major fire department training exercises. AFFFs are non-corrosive, biodegradable, fluorocarbon surfactants with foam stabilizers and do pose a potential for environmental stress through oxygen depletion. A description of past and present fire department training activities at Moody AFB is as follows:

- 1941-1946 (assumed); 1951-1955: Long-term knowledgeable base personnel identified the Burma Road Fire Department Training Area (Site No. 6) as the location of fire department training exercises at the time of reactivation of Moody AFB in 1951. The original base landfill (Site No. 1) during World War II was also located in this same general area. It is assumed that exercises during the World War II era (1941-1946) were also conducted at this site. The exercises were conducted about once per week using 300 to 1,000 gallons of POL waste per exercise. The POL waste, including contaminated fuels, and commingled waste oils and solvents, were collected at the flightline shops in 55-gallon drums which were transported to the fire department training area. The exercises served as the main method of POL waste disposal during this time period.

- 1955 to Present: Since 1955, exercises have been conducted within a 10-acre area (Figure 12, page VIII-12) located in the general vicinity (and including) the existing fire department training

area (Site No. 7). Interviews with knowledgeable base personnel and inspection of historical base photographs indicate that five burn sites have been used over the years within the 10-acre area. The existing site was constructed in 1975 and includes five aboveground JP-4 storage tanks and three practice burn facilities, including a mock building, a mock aircraft, and a mock drum. Only non-contaminated JP-4 has been used at the existing site. Exercises are conducted about twice per quarter using 300 to 400 gallons of non-contaminated JP-4 per exercise. Prior to 1975, the exercises were conducted at the earlier burn sites which included mock aircraft in circular, earthen-bermed areas. The exercises were conducted about once per week at first and then less frequently during the later years. About 300 to 400 gallons of POL waste per exercise, including contaminated fuels and waste oils and solvents were transported to these sites in 55-gallon drums for use in the exercising which served as a main method of POL waste disposal from 1955 to 1975.

5. Polychlorinated Biphenyls (PCBs)

The main source of PCBs at Moody AFB is electrical transformers. There are 370 in-service transformers at Moody AFB. No in-service transformers have been tested for PCBs and all transformers are considered as suspect PCB-containing items (greater than 500 ppm PCBs) until testing is accomplished. A program for testing of all PCB suspect transformers will begin in the near future. The total amount of transformer oil contained in the above in-service transformers is approximately 13,000 gallons.

PCBs and PCB-contaminated items (between 50 and 500 ppm PCBs) are currently stored in Building No. 1703, which is a concrete building with no floor drains. There are currently eight out-of-service transformers containing PCBs or PCB-contaminated transformer oil in protective storage at Building No. 1703 awaiting final disposition by the DPDO.

In the past, out-of-service transformers were drained into 55-gallon drums, and the drums and transformer carcasses taken to DPDO for final disposition. This was done infrequently at an estimated rate of less than five transformers per year. Draining of the transformers was done at the civil engineering storage yard behind Building No. 918. Visual inspection of this area gave no indication of past leaks or spills.

There is no record and no report of any major PCBs spills from leaking or blown transformers or during the handling of any PCBs materials. One long-term knowledgeable employee reported only one minor spill (less than 5 gallons) from a blown transformer over the past 25 years.

6. Pesticides

Herbicides and other pesticides are commonly used at Moody AFB for weed and pest control. The CE Entomology Shop is responsible for monitoring pesticide usage from golf course maintenance and roads and grounds, as well as its own operations. Most pesticides are currently stored in Building No. 803. Some herbicides are stored at the golf course in Building No. 1808 and at the roads and grounds storage yard near Building No. 664. Prior to 1970, most pesticides were stored in Building No. 904 (former entomology shop).

The major pesticides currently used for control of roaches, mosquitoes, fire ants, and other insect pests include Diazinon, Malathion, Sevin, Baygon, Amdro, Dursban, BP 300, Mocap, and Chlordane (termite control only). Ochemcomp and anticoagulants are commonly used for rodent control. The major herbicides currently used are Balan, Diurion, Roundup, Ter-San, Pramital, Monurotca, Power, Ocombherb, Ouncmherb, Komeen (algae control in Mission Lake), and Diquat and 2,4-D (water hyacinth control in Grassy Pond). Proper preparation and application procedures are followed. Empty pesticide containers have been triple rinsed, punctured with holes, and sent to trash dumpsters for disposal. In general, all pesticides were consumed in use in the past and, with the exception of DDT, there were no reports of unused pesticides disposed of in landfills or burial sites. DDT was commonly used in the past. When the use of DDT was banned, the remaining stock was placed in protective storage awaiting final disposition. In 1971, the contents of the cans were transferred to 55-gallon drums (approximately 10 drums in liquid form) which were then buried in an area adjacent to the northeast landfill. The DDT burial site is fenced off and marked with a sign. Further discussion of the DDT burial site (Site No. 5) is given in Section IV B of this report.

The only reported incident involving improper handling of pesticides occurred in 1970 when a large fishkill took place in the Golf Course Pond as a result of over-application of copper sulfate for algae control. The cause of the fishkill was oxygen depletion due to decaying algae.

7. Wastewater Treatment

The sanitary and industrial wastewater from Moody AFB is treated at the base sewage treatment plant which provides biological trickling filter secondary treatment and

nitrification for BOD_5, suspended solids, and ammonia nitrogen removal. The plant was constructed in 1941 and includes two primary sedimentation tanks, two trickling filters, two final clarifiers, a chlorine contact chamber, and an aerated outfall line. A major treatment plant renovation project was completed this year to improve performance, especially with respect to nitrification for ammonia nitrogen reduction. The reported capacity of the plant is 750,000 gpd. The average daily flow is approximately 430,000 gpd. The majority of the wastewater flow consists of domestic sanitary sewage. The industrial contribution is small and is estimated to be less than 1 percent of the total average daily flow. Some industrial wastewater receives pretreatment, by oil/water separators located in the industrial shop areas, for the removal of floating oils and greases.

The treated effluent from the plant is discharged to Beatty Creek, an intermittent stream which flows through the base. The effluent from the treatment plant contributes the majority of the flow in Beatty Creek during dry periods. The treated effluent discharge to Beatty Creek is permitted by the National Pollution Discharge Elimination System (NPDES) Permit No. GA 0020001. As required by the NPDES permit, the treated effluent is routinely monitored for total flow, BOD_5, suspended solids, pH, dissolved oxygen, ammonia nitrogen, and fecal coliform bacteria for compliance with the following discharge criteria:

Parameter	Monthly Average
Flow, mgd	0.750
Biochemical Oxygen Demand, mg/l	15
Suspended Solids, mg/l	30
Fecal Coliform Bacteria, geometric mean	200

Parameter	Monthly Average
Dissolved Oxygen, mg/l	6.0 (minimum)
Ammonia Nitrogen, mg/l	
May 1 through October 31	2.0
November 1 through April 30	4.0

The treatment plant has had problems in the past in meeting the ammonia nitrogen and dissolved oxygen discharge criteria. A major plant renovation project was recently completed to improve ammonia nitrogen treatment performance. In addition to the above parameters, the base Bioenvironmental Engineering staff routinely collects effluent samples for chemical oxygen demand, oils and grease, nitrate nitrogen, nitrite nitrogen, phosphate, and hexavalent chromium analyses (see Figure 13, page VIII-13 for sampling locations). The results for the past 5 years are summarized in Table 7. In general, the results are indicative of good quality treated effluent. Heavy metals scans of treated effluent have also been conducted every 3 years for cadmium, chromium, mercury, nickel, silver, lead, arsenic, selenium, and barium. A review of heavy metals data for September 1973, November 1978, and January 1982 shows negative results (below detection limits) for most of the above heavy metals. The exceptions were a low silver concentration (0.031 mg/l) detected in November 1978 and a low lead concentration (0.38 mg/l) detected in the most recent January 1982 sampling.

Waste sludge from the treatment plant is stabilized in an anaerobic digester and then dewatered on two sludge drying beds with leachate collection. The dewatered sludge has been used throughout the base in the past as a soil conditioner. Since approximately 1977, the sludge has been mixed with mulch and composted in a 1- to 2-acre area located at the old southwest landfill.

Table 7
MOODY AFB TREATED WASTEWATER EFFLUENT
CHARACTERISTICS SUMMARY
(1977-1981)

Parameter	1977 Average	1978 Average	1979 Average	1980 Average	1981 Average
COD, mg/l	45.5	46.0	41.5	65.0	76.1
Oils and Grease, mg/l	1.6	0.8	0.4	3.8	6.4
Nitrate as N, mg/l	4.1	5.8	6.7	4.6	7.2
Nitrite as N, mg/l	0.02	0.02	0.02	0.02	0.03
Nitrogen, Total, mg/l	4.5	4.2	2.7	6.6	10.4
Phosphate (Ortho), mg/l	5.0	5.1	5.5	6.0	6.4
Phosphate (Total), mg/l	5.3	6.8	6.4	7.4	8.9
Chromium Hexavalent, mg/l	<.05	<.05	<.05	<.05	<.05

Source: USAF Hospital Moody, Moody Air Force Base, Georgia, Water Pollution Emission Inventory and Monitoring Summary, December 1981.

The anaerobic digester was cleaned during the recent treatment plant renovation project. The contents of the digester are currently being temporarily stored in an earthen diked area. EP toxicity tests for this sludge were negative. This sludge will be disposed of off-base in a landfill or by land spreading.

There are six oil/water separators located at various industrial shops and washracks to provide pretreatment of the industrial wastewater. In addition, there are several holding tanks for storage of waste POL. The holding tanks and oil/water separators are pumped out periodically by a contractor and the waste POL is transferred to a 2,000-gallon central holding tank located near Building No. 552 to await final disposition by the DPDO. An inventory of all oil/water separators and holding tanks including facility number and approximate dates of construction, is provided in Appendix I. Several industrial shops were discharging wastewater to storm drains in the past. These discharges were regulated by a separate NPDES permit. A major program was conducted in 1975 to connect all industrial shop wastewater discharges to the sanitary sewer system. Also, the corrosion control operation (Building No. 717) has recently converted from a phenol-based paint stripper to an ammonia-based paint stripper in order to reduce phenol loads to the base sewage treatment plant. The washwater containing the ammonia-based paint stripper is discharged to a 10,000-gallon holding tank and then pumped at a controlled rate (2 gpm) to the treatment plant in order to eliminate the potential for shock loads to the system.

8. Available Water Quality Data

There are seven potable water supply wells and four non-potable water supply wells at Moody AFB (Figure 11, page VIII-11). The majority of the potable water is

supplied from Wells No. 1, 2, and 3 (Buildings No. 913, 946, and 984, respectively). Water from the above three wells (total capacity of about 1,900 gpm) is treated at the main base treatment plant which was constructed in 1941. Treatment consists of aeration, chlorination, and fluoridation. Treatment at the remaining four small potable water supply wells consists of chlorination. The four non-potable water supply wells are used for fire protection and irrigation. The potable water supply wells are analyzed every 3 years for heavy metals, pesticides, and gross alpha radioactivity. The most recent results (January 13, 1982) show that all of the potable water supply wells meet primary drinking water standards. Recent results for the potable water supply well at Grassy Pond show that the water quality of this well also meets primary drinking water standards.

The Georgia Department of Natural Resources, Environmental Protection Division, conducts periodic sampling and analyses of public water supply systems in the state which serve more than 25 people. Recent results for Barretts Mobile Home Court (located 1.5 miles north of Moody AFB) and L&N Trailer Park (located directly west of Moody AFB on Bemiss Road) show that heavy metals and pesticides are below drinking water standards.

The base storm drainage system includes open drainage and underground storm drainage concrete pipes. Most drainage from the main base area and runways empties into Grand Bay or Mission Lake, which both discharge to Grand Bay Creek east of the base. Portions of the base, family housing, and the golf course storm drainage empties into Beatty Creek west of the base. Seventeen stormwater drain and drainage ditch water quality sampling points were routinely monitored by Bioenvironmental Engineering personnel during the early 1970's. After the connection of all industrial shop discharges to the sanitary sewage system

in 1975, the water quality sampling points were reduced to two drainage ditch locations. The early 1970's sampling effort included analyses for heavy metals, phenols, oils and grease, chemical oxygen demand, total organic carbon, suspended solids, ammonia nitrogen, nitrate nitrogen, and total kjeldahl nitrogen. A review of available sampling results during this time shows periodic occurrences of elevated chemical oxygen demand, oils and grease in the flight line area drainage. Heavy metals concentrations were generally not detectable or very low at all sampling locations. The existing stormwater sampling points, i.e., the flightline storm drain and the POL storm drain, are routinely sampled for chemical oxygen demand and oils and grease, and suspended solids. The results for the past several years (summarized in Table 8) generally show good water quality with respect to the above parameters. The locations of past and present stormwater sampling points are shown on Figure 13 (page VIII-13).

One set of comprehensive sample results (March 1976) was available for Mission Lake. Analyses included heavy metals, cyanide, phenols, oils and grease, chemical oxygen demand, total organic carbon, and the nitrogen series. In general, water quality appeared to be good. Most heavy metals were absent with the exception of total chromium (0.20 mg/l) and hexavalent chromium (0.10 mg/l).

The treated effluent from the base sewage treatment plant discharges to Beatty Creek. The base contract sewage treatment plant operator routinely monitors Beatty Creek for BOD_5 and dissolved oxygen at three locations, i.e., 0.2 mile above, 0.04 mile below, and 1.0 mile below the effluent discharge point. A review of recent results shows no significant difference in BOD_5 and DO levels in the creek above and below the effluent discharge points. Some phenol data on the creek are

Table 8
MOODY AFB STORM DRAIN MONITORING SUMMARY
(1977-1981)

A. Flight Line Storm Drain

Parameter	1977 Average	1978 Average	1979 Average	1980 Average	1981 Average
COD, mg/l	22.3	27.5	18.3	11.4[a]	20.0
Oils and Grease, mg/l	0.5	0.3	0.3	0.3[a]	0.3
Residue Non-Filterable (SS) mg/l	9.3	10.7	7.8	29.9[a]	4.3[b]

[a]Sampling accomplished January to August 1980.

[b]Sampling accomplished February, March, and May 1981.

B. POL Storm Drain

Parameter	1979 Average	1980 Average	1981 Average
COD, mg/l	33.1[a]	16.8[b]	14
Oils and Grease, mg/l	0.4[a]	0.4[b]	0.3
Residue Non-Filterable (SS) mg/l	7.9[a]	7.0[c]	4.3[d]
Surfactants, mg/l	0.2[a]	0.11[e]	--

Source: USAF Hospital Moody, Moody Air Force Base, Georgia, Water Pollution Emission Inventory and Monitoring Summary, December 1981.

[a]Sampling started May 1979.

[b]Sampling not accomplished November and December 1980.

[c]Sampling not accomplished October, November, and December 1980.

[d]Sampling accomplished February, March, and May 1981.

[e]Sampling accomplished September, October, November, and December 1980.

available for September 1981. Phenol levels were very low and no significant differences in phenol levels occurred in samples above and below the effluent discharge.

9. Other Activities

The review of the records and information obtained during the interviews produced no evidence of the past or present storage, disposal, or handling of biological or chemical warfare agents at Moody AFB.

All explosive ordnance disposal (EOD) activities are conducted at the Lily Pad Pond Fill site. This EOD area includes a burn pit and a detonation pit and has been in operation since 1979. Primarily small munitions and starter cartridges are burned at the facility which has a 300-lb explosive limit. EOD activities are currently conducted about twice per year. Prior to 1979, EOD activities were conducted in a small cleared area at Dudley's Hammock which had a 5-lb explosive limit. Salvageable materials from both sites were sent to DPDO; inert, unsalvageable materials were disposed of as trash. No burial sites are known to exist at either of the above EOD areas.

The records search indicated that trichloroethylene (TCE) has been used at Moody AFB, that small quantities are still in use today, but that no large-scale use or spills of TCE have occurred in the past.

B. ENVIRONMENTAL STRESS

Ground tours and a helicopter overflight of Moody AFB and the off-base sites revealed no significant environmental stress known to be related to hazardous wastes. However, one suspicious circumstance was noted in the vicinity of the "north" POL storage yard in the northeast

corner of the base. Along a shallow storm ditch on the downgradient edge of this fenced area, there is a stand of approximately two dozen young (3 to 10 years old) loblolly pine trees that are either dying or already dead. Only the trees closest to the drainage ditch show signs of stress. Whether the condition of these trees is related to natural disease or the spill of some waste product could not be determined during the site visit.

A number of fishkills have been reported at Mission Lake and the golf course pond. The most recent of these occurred in June 1982 at the golf course pond. Monitoring of water quality and investigation by Moody AFB hospital staff and State fisheries biologists determined that this fishkill was probably the result of overfertilization, and subsequent dissolved oxygen depletion by the death of large algal populations. Elevated ammonia levels from fertilization may have additionally stressed the fish populations. Other fishkills were reported for the golf course pond and for Mission Lake, with oxygen depletion caused by overfertilization or by treatment with algicides as the suspected causes. None of the reported fishkills at Moody AFB have been shown to be caused by the uncontrolled release of hazardous chemicals.

C. DISPOSAL SITES IDENTIFICATION AND EVALUATION

Interviews with 43 past and present base personnel (Appendix C) resulted in the identification of 14 disposal and spill sites at Moody AFB. The approximate locations of these sites are shown on Figure 14 (page VIII-14). A summary of the approximate dates that the major disposal sites (landfills, fill sites, and fire department training areas) were in use is given on Figure 15 (page VIII-15).

A preliminary screening was performed on all 14 identified past disposal and spill sites based on the information obtained from the interviews and available records from the base and outside agencies. Using the decision tree process described in Section I.E., page I-5, based on all of the above information, a determination was made of the potential for hazardous material contamination at any of the identified sites. For those sites where hazardous material contamination was considered significant, a determination was made whether significant potential exists for contaminant migration from these sites. These sites were then rated using the U.S. Air Force Hazard Assessment Rating Methodology (HARM), which was developed jointly by the Air Force, CH2M HILL, and Engineering-Science for specific application to the Air Force Installation Restoration Program. The HARM system considers four aspects of the hazard posed by a specific site: the waste and its characteristics, potential pathways for waste contaminant migration, the receptors of the contamination, and any efforts to contain the contaminants. Each of these categories contains a number of rating factors that are used in the overall hazard rating. A more detailed description of the HARM system is included in Appendix D. Copies of the completed rating forms are included in Appendix J. A summary of the sites including potential hazards is given in Table 9.

The following is a description of each site, including a brief discussion of the rating results.

1. Landfills

Sanitary landfill sites at Moody AFB were used from 1941 until 1978. Since 1978, all solid waste other than digested sludge, wood, and rubble has been hauled off-base by a contractor. Four landfill sites are described below.

Table 9
DISPOSAL SITE SUMMARY FOR MOODY AFB, GEORGIA

Site No.	Site Description	Waste Type	Potential Hazard		
			Contamination	Migration	Rating
1	Burma Road Landfill	Municipal and industrial wastes	Yes	Yes	Yes
2	Northwest Landfill	Municipal and industrial wastes	Yes	Yes	Yes
3	Southwest Landfill	Municipal and industrial wastes, low-level radioactive waste	Yes	Yes	Yes
4	Northeast Landfill	Municipal and industrial wastes, POL and solvent-saturated soil	Yes	Yes	Yes
5	DDT Burial Site	Concentrated DDT	Yes	Yes	Yes
6	Burma Road Fire Department Training Area	POL, solvents	Yes	Yes	Yes
7	Existing Fire Department Training Area	POL, solvents	Yes	Yes	Yes
8	Lily Pad Pond Fill Site	Construction/demolition rubble, industrial wastes	Yes	Yes	Yes
9	South Runway Approach Fill Site	Pavement rubble	No	NA	No
10	South Crash Trail Fill Site	Construction/demolition rubble	No	NA	No
11	North Crash Trail Fill Site	Construction/demolition rubble	No	NA	No
12	North POL Tank Farm	AVGAS/diesel fuel	Yes	Yes	Yes
13	Parts Burial Site	Aircraft parts	No	NA	No
14	AVGAS Sludge Burial Site	AVGAS lead sludge	Yes	No	No

- Site No. 1 is located on Air Force fee-owned property along Burma Road, approximately 800 feet southeast of Mission Lake, and approximately 200 feet north of the base boundary.

  This site was the main sanitary landfill for Moody AFB from 1941 through 1946 when the base was closed and then again for approximately 2 years after the base was reopened in 1951. The landfill was operated by cutting ditches, filling, and covering. Contents of the landfill were reported to be general refuse, including garbage, paper, lumber, metal, and other items. An incinerator was reported to be present at this site for burning of solid waste during World War II. Several of the trenches at this site are still clearly visible where settling has created depressions and necessitated frequent patching of Burma Road. Small quantities of hazardous materials may have been placed in this landfill; however, the presence of significant waste quantities was not reported. The overall rating score for Site No. 1 was 49. Although pathways (63) and receptors (60) subscores were high due to the proximity of surface waters, the installation boundary and habitat of a threatened species (American alligator), the low waste characteristics subscore (24) lowered the overall rating.

- Site No. 2 is located on Air Force fee-owned property at the northwest corner of Moody AFB, near the present roads and grounds facilities and the old POL area. This site was identified as being the main base landfill from 1953 until 1955. Reports indicated that this site received all base domestic refuse during these years and was

regularly burned. Once again, there was no evidence for disposal of significant quantities of hazardous materials in this landfill; however, experience at other sites would indicate that small quantities of waste POL may be present. Due to the proximity of this landfill to Beatty Creek and the base boundary, pathways and receptors subscores were relatively high (56 and 54, respectively), but since only suspected small quantities of hazardous wastes entered the landfill, a low waste characteristic subscore of 24 brought the total score for Site No. 2 to 45.

- Site No. 3 occupies nearly 30 acres of Air Force fee-owned property along the southwest corner boundary of Moody AFB, west of Mission Lake. Activity at this site was initiated in 1955 and continued until 1972. The entire area was reported to consist of trenches about 14 feet deep, filled with general base refuse. A small quantity of low-level radioactive waste (electron tubes) was reportedly buried at this site during the 1950's; however, the exact location is not known. No large quantities of hazardous wastes were reported from this site; however, small quantities of oil and solvent wastes are suspected. Tail ditches were dug at the site for collection of leachate and are still evident, although no visible contamination was observed. Loblolly pines have been planted over much of this area. Currently, some organic debris (leaves, branches, and grass clippings) are deposited at this site and some composting has been done with sludge from the sewage treatment plant. Due to this site's proximity to Mission Lake and the base boundary, and the presence of a nearby off-base

water supply well located about 1,300 feet upgradient from the site, pathways (63) and receptors (64) subscores were fairly high. A total score of 56 for Site No. 3 resulted from a greater suspected waste quantity than in the other landfills due to the length of time this site was used.

- Site No. 4 is a landfill located on Air Force fee-owned property near the northern installation boundary, northeast of the runway areas. This site reportedly received all base refuse during the period from 1972 until 1978. Some specific items reported to be present in this landfill include: a truckload of waste runway marking paint, and about 50 cubic yards of fuel and solvent saturated soil brought from the DPDO storage yard. Once again there were no reports of significant quantities of hazardous wastes being routinely deposited at this site. Site No. 4 received an overall rating of 49 based on a receptors subscore of 55, a waste characteristics subscore of 30, and a pathways subscore of 61.

2. DDT Burial Site

Site No. 5 is located on Air Force fee-owned property at the western edge of the northeast landfill (Site No. 4). At this location approximately 500 gallons of concentrated DDT solution was reportedly buried in 10 55-gallon drums in 1971. A single pit was excavated about 6 to 8 feet deep, and the filled hole was capped with a clayey-sand mound to minimize ponding over the site and leachate generation. This area is now fenced and clearly marked. Due to the known waste characteristics, the proximity to the base boundary, the presence of a nearby

off-base private water supply well approximately 700 feet transverse gradient from the site, and the presence of nearby critical environments (Grand Bay wetlands), this site received an overall rating score of 53.

3. Fire Department Training Areas

Fire department training activities at Moody AFB have been conducted at two main areas. These areas are discussed below.

- Site No. 6 is the earliest reported fire department training area at Moody AFB. This site was located on Air Force fee-owned property in the vicinity of Site No. 1, the Burma Road landfill and near the Mission Lake dam. This burn pit consisted of a circular earthen bermed area. Training exercises were conducted about once weekly from 1951 through 1955, and suspected to have occurred at this site from 1941 until 1946. It is suspected that all forms of waste POL's, including waste oils, solvents, and thinners were used for these training exercises at a rate of about 300 to 1,000 gallons per week. Most of the POL waste would have been consumed in the fires; however, some minor percolation into the ground may have taken place. Rainfall collection and infiltration within the bermed area would provide a driving force for vertical contaminant migration. Due to proximity of the site to the base boundary (approximately 200 feet), to Mission Lake which is the critical habitat of a threatened species, and to a water supply well (Well No. 7), this site received high subscores for

pathways (63) and receptors (60). The waste characteristics subscore was 32 and the site received an overall rating score of 52.

- Site No. 7 includes approximately 10 acres of USDA property (USAF use permit) in the vicinity of the present fire department training area near the east runway trim pad. Five individual pits were identified in this area by interviews, review of historical photos, and existing visible evidence. The approximate location of these burn pits is shown on Figure 12. Each of these burn pits consisted of circular earthen bermed areas. Fire department training exercises were held at these pits about once per week until 1975 and approximately four times per year from 1975 until the present. Miscellaneous waste oils, fuels, solvents, and paint wastes and thinners were disposed of by burning in these pits until approximately 1975, after which time only non-contaminated JP-4 jet fuel has been used. As with Site No. 6, rainfall collection and infiltration within the bermed area would provide a driving force for vertical contaminant migration. All of these pits are dirt-lined and located in an area of silty and clayey sand soils. Due to the shallow ground-water table (approximately 10 feet below ground surface), the proximity of the site to the nearest water supply well (3,000 feet), and the proximity of the site to Grand Bay Swamp wetland area (1,000 feet), this site received a high subscore for pathways (61). The receptors and waste

characteristics subscores were 44 and 48, respectively, giving the site an overall rating score of 51.

4. Construction Rubble Fill Sites

During the long history of operations at Moody AFB, many changes have been made in runways and building locations. Large amounts of construction/demolition rubble have been generated and were generally disposed of on-base in low-lying areas prior to 1979. Subsequent to 1979 these materials have been disposed of off-base. Four sites were identified during interviews and are discussed below.

- Site No. 8, known as the Lily Pad Pond fill site, is located on USDA property (USAF use permit) near the southeastern corner of the base. This site was formerly a wetland area which was reportedly filled with runway demolition rubble from the late 1960's until 1979. Some unauthorized dumping of industrial type wastes also occurred including drums, metal, lumber, and aircraft tires. Much of this waste material is still visible around the edge of the fill site, and some wastes from the area have produced visible contamination of the pond surface with oily residues. It is not known if any full drums of wastes are buried at this site. The Lily Pad Pond site is currently (since 1979) being used as the Explosive Ordinance Disposal (EOD) area, and a deep pit in the middle of this area shows wood and metal but no cans or drums. Due to the remoteness of this site in a wetland area near the base boundary and water supply wells, the receptors subscore was only 48. The waste characteristic subscore was 40 based on small confirmed quantities of oily wastes. The

pathways subscore was 80 because of indirect evidence for contaminant migration, giving a total score for the site of 56.

- Site No. 9 is the south runway approach rubble fill area which is located on USDA property (USAF use permit). This low-lying area was reportedly filled with clean pavement rubble in order to provide access to the runway guidance system. No hazardous materials are suspected to have entered this site and, therefore, it was not rated.

- Site No. 10 is a rubble fill area along the south base boundary line. Site No. 10 includes both Air Force fee-owned property and USDA property (USAF use permit). Clean construction and demolition rubble has been used to extend the south crash trail east along the south boundary line. There were no reports of hazardous materials entering this fill area, therefore, it was not rated.

- Site No. 11 is the north crash trail rubble fill area which is located on USDA property (USAF use permit). Miscellaneous building rubble is being used to extend the crash trail along the north boundary line to join with the eastern crash trail near Shiners Pond. No hazardous wastes are suspected to be present in this filled area, therefore, it was not rated.

5. North POL Storage Yard

Site No. 12 is the old POL storage yard located on Air Force fee-owned property near the northwestern corner of Moody AFB. At this site, four 25,000-gallon buried tanks were formerly used to store leaded AVGAS and are currently

used to store diesel heating oil. Although there were no verbal reports of spills at this area, the presence of a small stand of dead loblolly pine trees adjacent to the fence indicates the probability of spills and of fuel-saturated soil. Due to the proximity of this site to several water supply wells, the base boundary, and populated areas, it received a receptors subscore of 52. The waste characteristics subscore was 40 and the indirect evidence of contamination contributed a pathways subscore of 80, giving a total score of 55 for this site.

6. Parts Burial Site

Site No. 13 is located on USDA property (USAF use permit) behind Building No. 719 in the south flightline area. Between 15 and 20 years ago, miscellaneous engine and aircraft parts were reportedly buried at this site. No hazardous wastes are suspected to have been included at this site and, therefore, it was not rated.

7. AVGAS Sludge Burial Site

Site No. 14 is located on USDA property (USAF use permit) in the existing POL facility, on the south side of the base flightline/industrial area, and is marked by a sign indicating that lead sludge has been buried there. The sludge resulted from periodic cleaning of the POL tanks, which were used to store leaded AVGAS prior to 1956. Since the sludge is contained in a small underground concrete tank, no pathways for contaminant migration are expected to exist and, therefore, this site was not rated.

8. Summary

A total of 14 disposal and spill sites were identified at Moody AFB. Those sites identified as having a potential for hazardous material

contamination and migration were rated using the HARM rating system. A summary of the hazard ratings for these nine sites is given in Table 10.

Table 10
SUMMARY OF DISPOSAL SITE RATINGS

Site No.	Site Description	Subscore (% of Maximum Possible Score in Each Category)			Overall Score	Page Reference of Site Rating Form
		Receptors	Pathways	Characteristics		
1	Burma Road Landfill	60	63	24	49	J-1
2	Northwest Landfill	54	56	24	45	J-3
3	Southwest Landfill	64	63	40	56	J-5
4	Northeast Landfill	55	61	30	49	J-7
5	DDT Burial Site	55	54	60	53	J-9
6	Burma Road Fire Department Training Area	60	63	32	52	J-11
7	Existing Fire Department Training Area	44	61	48	51	J-13
8	Lily Pad Pond Fill Site	48	80	40	56	J-15
12	North POL Tank Farm	52	80	32	55	J-17

V. CONCLUSIONS

V. CONCLUSIONS

A. No direct evidence was found to indicate that migration of hazardous contaminants exists within or beyond Moody AFB boundaries. Analyses of base potable water supply wells and several nearby off-base potable water supply wells show that these wells do not exceed primary drinking water standards for pesticides and heavy metals.

B. Indirect evidence of contamination was found at Sites No. 8 (oil slick on nearby surface water) and at Site No. 12 (environmentally stressed pine trees). No other indications of environmental stress were noted.

C. Information obtained through interviews with 43 past and present base personnel, base records, shop folders, and field observations indicate that hazardous wastes have been disposed of on Moody AFB property in the past.

D. The potential for migration of hazardous contaminants into the water table aquifer is high because of (1) high ground-water table and (2) high precipitation in the area. Contaminants would likely travel vertically to the water table, then laterally to discharge to adjacent surface waters. The potential for contaminant migration into the principal artesian aquifer is low due to the presence of a thick, low-permeability clay layer at a depth of about 100 to 150 feet. Therefore, the potential for contaminants to enter the principal artesian aquifer and migrate to major potable water supply wells is low.

E. Table 11 presents a priority listing of the rated sites and their overall scores. The following sites were designated as areas showing the most significant potential (relative to other Moody AFB sites) for environmental impact.

Table 11
PRIORITY LISTING OF DISPOSAL SITES

Site No.	Site Description	Overall Score
3	Southwest Landfill	56
8	Lily Pad Pond Fill Site	56
12	North POL Tank Farm	55
5	DDT Burial Site	53
6	Burma Road Fire Department Training Area	52
7	Existing Fire Department Training Area	51
1	Burma Road Landfill	49
4	Northeast Landfill	49
2	Northwest Landfill	45

1. Site No. 3 (Southwest Landfill)

This site was the main sanitary landfill for the entire base from 1955 until 1972 and has the longest operating time span of any on-base landfill. Small quantities of hazardous wastes, including waste paints, thinners, and solvents, may have been disposed of at this site in the past. Interceptor ditches have been dug for collection of runoff and leachate from the site. The interceptor ditches eventually discharge into Mission Lake, thereby providing a potential pathway for any hazardous contaminants in the leachate, if present, to enter this surface-water body. The high ground-water table at this site provides a potential pathway for hazardous contaminants in the leachate, if present, to enter the area ground water at this location. The direction of ground-water flow in the water table aquifer is probably east discharging into Mission Lake or southeast into low-lying areas off-base.

2. Site No. 8 (Lily Pad Pond Fill Site)

This site was formerly a wetland area which was filled with construction rubble through the late 1960's until 1979. Records indicate that unauthorized dumping of industrial type wastes at this site was a problem in the past. A ground tour of the site showed visible contamination (oily residues) of the pond surface at the periphery of the site.

3. Site No. 12 (North POL Area)

Four 25,000-gallon underground tanks are currently used to store diesel heating oil. A ground tour of the site showed a small stand of dead or dying young pine trees adjacent to a shallow drainage ditch which drains stormwater from the site. Although there were no reports of fuel

spills at the site, the possibility exists that the pine tree mortality may have been caused by fuel spills in this drainage ditch; however, natural causes of the pine tree mortality cannot be ruled out.

4. Site No. 5 (DDT Burial Site)

Approximately ten 55-gallon drums of concentrated DDT solution were buried at this site in 1971 after the use of DDT as a pesticide was banned. Information obtained from interviewees indicates that the drums were sealed and in good condition. The exact location of the site is fenced off and marked with a sign. The drums have been buried for over 10 years and the drums or drum seals may have already corroded or may corrode in the future thereby providing the potential for contamination of the area ground water. The direction of ground-water flow within the water table aquifer is southeast toward Grand Bay Swamp. A private well is located approximately 700 feet transverse gradient (north) from the site. Contaminant migration to this well may be possible. An improperly constructed or faulty well casing could increase the potential for contamination of the deeper aquifer.

F. An area of concern, other than disposal sites, is Mission Lake which receives storm drainage from the flightline shops and the main POL area. Several of the flightline shops were connected to the storm drainage system in the past. Existing water quality information for this on-base recreational lake is very limited.

G. The remaining rated sites (Sites No. 1, 2, 4, 6, and 7) are not considered to present significant environmental concerns.

VI. RECOMMENDATIONS

VI. RECOMMENDATIONS

A. PHASE II PROGRAM

A limited Phase II monitoring program is suggested to confirm or rule out the presence and/or migration of hazardous contaminants. The priority for monitoring at Moody AFB is considered low to moderate and no imminent hazard has been determined.

Tables 12 and 13 present a summary of recommended monitoring sites, parameters to be measured, and the rationale for the analyses. Specifically, monitoring is recommended for the Southwest Landfill (Site No. 3), Lily Pad Pond Fill Site (Site No. 8), North POL Area (Site No. 12), and Mission Lake. The approximate monitoring locations are shown on Figure 16 (page VIII-16).

1. Southwest Landfill (Site No. 3)

It is recommended that three shallow monitoring wells be installed, one upgradient and two downgradient, to determine if landfill leachate is contaminating the area ground water with hazardous contaminants. Each well should be drilled to a depth of 10 feet below the water table (approximately 25 feet) and screened from 2 feet above the water table to the bottom of the well. The wells should be analyzed for the parameters given in Table 12. The monitoring wells should continue to be sampled periodically, every 1 to 2 years, to determine the potential for long-term contaminant migration. At the same time accurate water level measurements should be obtained to determine the direction of ground-water flow in this area.

Table 12
RECOMMENDED PHASE II ANALYSES

Sample Type	Organic Compounds (VOC or TOX)	Heavy Metals	Phenols	Pesticides	COD, TOC, and Oil and Grease
Monitoring Wells					
Southwest Landfill (Site No. 3)	X	X	X	X	X
Backhoe Test Pit or Auger Hole					
North POL Area (Site No. 12)		X[a]			X
Surface-Water Samples					
Lily Pad Pond Fill Site (Site No. 8)	X	X	X		X
Mission Lake	X	X	X	X	X
Bottom Sediment Samples					
Mission Lake	X	X		X	

[a]Lead only.

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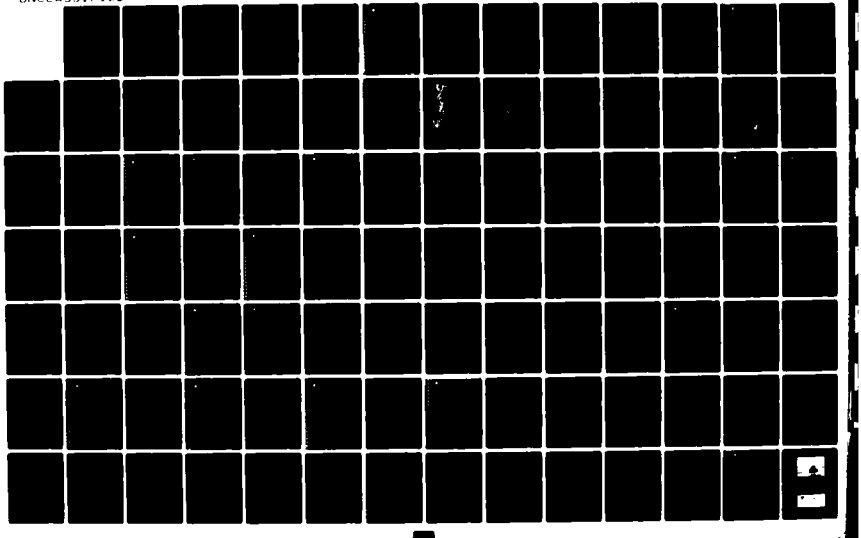


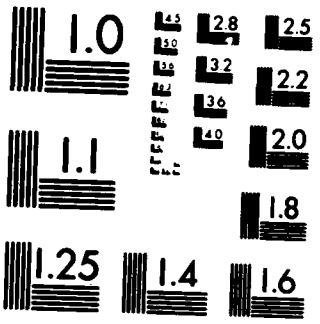


Table 13
RATIONALE FOR RECOMMENDED ANALYSES

Parameter	Rationale
Volatile Organic Compounds (VOCs) or Total Organic Halogens (TOX)	Organic solvents used on-base (past and present)
Phenols	Phenolic cleaner and paint stripper used in the past
Heavy Metals (lead, nickel, chromium, cadmium, and silver)	Potential sources identified (leaded fuel, battery acid, and electrolyte, cadmium plating, paint, photographic chemicals)
Pesticides	Commonly used at Moody AFB in the past (including DDT and 2, 4-D)
COD, TOC, and Oil and Grease	Fuel spill indicators and indicators of non-specific contamination

2. Lily Pad Pond Fill Site (Site No. 8)

Surface-water samples should be collected at least once and analyzed for the parameters given in Table 12. The samples should be collected at four locations including one sample at the northern edge of the site and three samples approximately 30 to 50 feet from the edge. This sampling is recommended to determine the nature and the extent of surface-water contamination from this site. This sampling may be conducted in-house, separate from the Phase II program.

3. North POL Area (Site No. 12)

A backhoe test pit or auger hole should be excavated at the edge of the shallow drainage ditch behind the North POL Area to a depth of at least 1 foot below the water table (approximately 3 to 5 feet). A water sample should be collected from the test pit or auger hole and analyzed for the parameters given in Table 12. The pit or auger hole should be visually inspected for soil characteristics and evidence of fuel saturation or stratification. This information will help to confirm or rule out fuel saturation as a potential cause of the pine tree mortality observed in this area.

4. Water quality data for Mission Lake is extremely limited and additional data should be collected to confirm or rule out the presence of hazardous contaminants. The main reason for concern is that Mission Lake receives stormwater drainage from the flightline shop areas and the main POL area. In the past (prior to 1975), industrial wastewater discharges from several of the shops were connected to the storm drain system and would have entered Mission Lake. The interceptor ditch from the Southwest Landfill (Site No. 3) also discharges into Mission Lake

during rainfall events. Surface and bottom sediment samples should be collected at least once at the following locations:

Sample Type	Location (see Figure 16, page VIII-16)
Surface Water	Inlet Stream Channel to Mission Lake (after rainfall)
Surface Water	Center of Lake (mid-depth)
Surface Water	Discharge End of Lake (mid-depth)
Bottom Sediment	Inlet Stream End of Lake
Bottom Sediment	Middle of Lake
Bottom Sediment	Discharge End of Lake

An Ekman dredge can be used to collect the bottom sediment samples. The samples should be analyzed for the parameters given in Table 12.

5. The final details of the monitoring program, including the specific locations of monitoring wells, should be finalized as part of the Phase II program.

6. In the event that contaminants are detected, a more extensive field survey program should be implemented to determine the extent of contaminant migration.

B. DDT BURIAL SITE CLEANUP

Since the exact location of the DDT-containing drums at Site No. 5 is known, it is recommended that the drums be excavated and their contents disposed of in an environmentally sound manner, e.g., incineration. This would constitute an IRP Phase IV action and would reduce the risk of potential future ground-water contamination from this source. The excavation, removal, and offsite disposal

of the DDT would best be done by an experienced hazardous waste clean-up contractor, who is qualified to provide the safety and care necessary for the protection of personnel and the environment during the drum removal and disposal operation. In addition, soil sampling for DDT should be conducted in the vicinity of the excavated site, followed by off-base disposal of any contaminated soil that may be present.

C. OTHER RECOMMENDATIONS

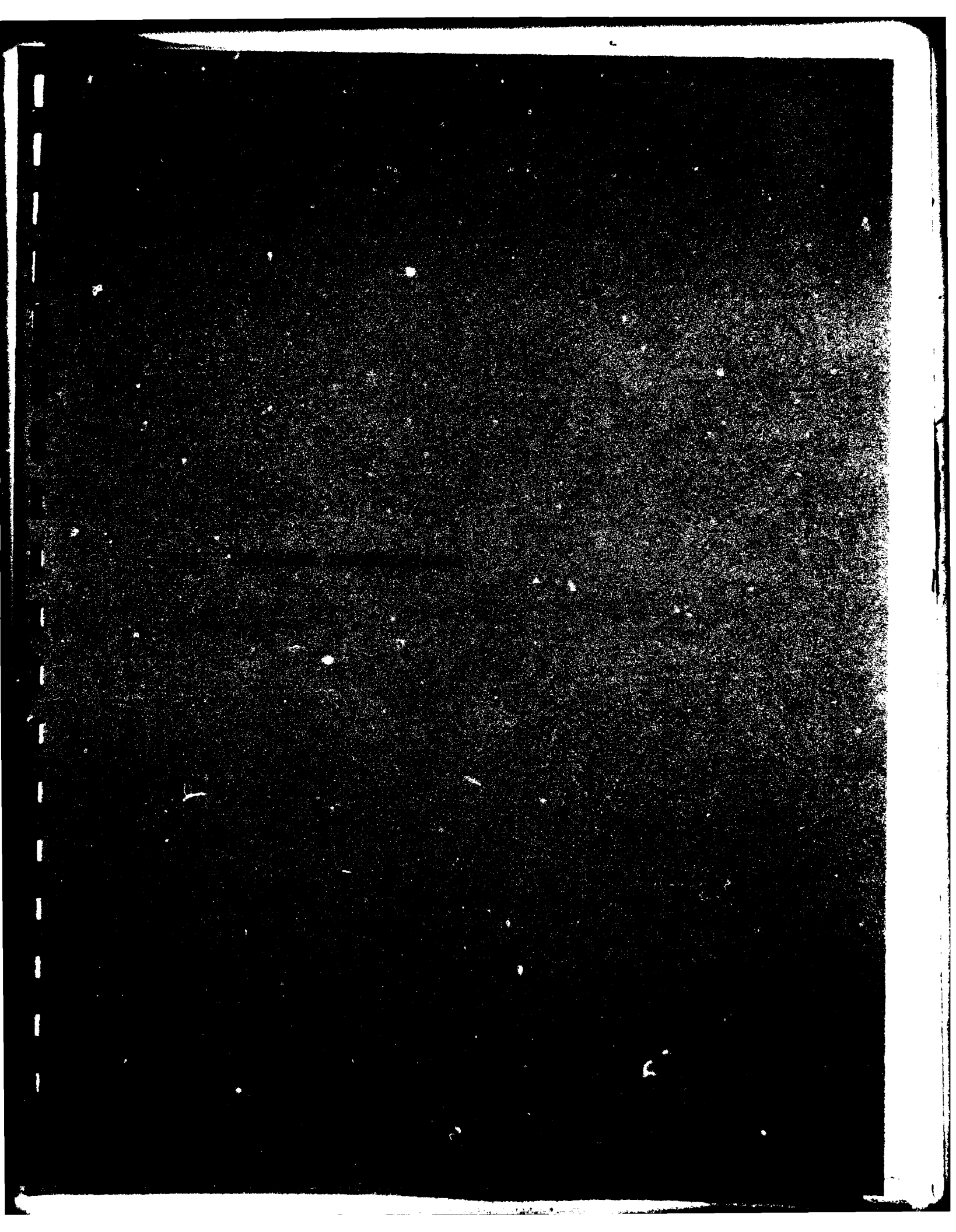
Other recommendations as a result of observations made during the onsite base visit include the following:

1. The base should continue its program of comprehensive sampling and analysis of active base potable water supply wells. It is recommended that a volatile organic compound (VOC) analysis or a total organic halogen (TOX) analysis be routinely included in addition to the analyses currently performed. This monitoring is recommended as a precautionary measure to determine if a long-term contaminant migration potential exists.

2. The contents of the out-of-service underground tanks listed in Appendix H should be identified and the contents removed for disposal if appropriate. The tanks should be removed or sealed to prevent further use.

3. The base should consider the installation of protective roof covers for solvent drums stored outside. Several in-service solvent drums were observed to be bulging as a result of outside storage in direct sunlight.

4. The base should consider the use of central, segregated tanks for POL waste storage prior to final disposition. This would eliminate the large number of POL waste drums which are handled throughout the shop areas and at the DPDO storage yard.



VII. OFF-BASE INSTALLATIONS

A. INTRODUCTION

Four off-base installations were included in the Moody AFB records search: a Ground Air Transmitter Receiver (GATR) site, the Whitehouse Joint Surveillance System Radar Tower site, the Cross City Joint Surveillance System Radar Tower site, and the Grassy Pond Recreational Annex. The locations of these installations are shown on Figure 1. Ground tours and interviews were conducted on October 7, 1982 at the GATR site, Whitehouse Tower, and Cross City Tower. A ground tour of the Grassy Pond Recreational Annex was conducted on October 19, 1982. Interviews of personnel knowledgeable about the Grassy Pond Recreational Annex were conducted at Moody AFB during the week of October 18-22, 1982.

B. GATR SITE

The GATR site is located on 5 acres of fee purchase land off U.S. Highway 17 approximately 6.5 miles south of Orange Park, Florida. The site has been in operation since the early 1960's and is currently manned during the daytime by four 20th Air Defense Squadron military personnel under the command of Ft. Lee Air Force Station (AFS), Virginia. The primary mission of the GATR site is aircraft communications between Ft. Lee AFS and fighter interceptors in the Florida/Georgia area.

Sanitary wastewater is disposed of onsite in a septic tank/drain field system. A shallow well provides water for washdown, irrigation, and other non-potable purposes. Bottled water is used for drinking purposes. Interviews with knowledgeable personnel at the site indicated that no

present or past landfills or burial sites exist on the property. No known past fuel or PCB spills are known to have occurred at the site. Two large transformers, each containing 230 gallons of PCB-containing transformer oil, were removed and properly disposed of approximately 2 years ago. The Navy assisted in the transformer removal and disposal. Solid waste, mainly trash, is routinely hauled offsite by a contractor for disposal. No hazardous wastes are known to have been disposed of at the GATR site.

C. WHITEHOUSE JOINT SURVEILLANCE SYSTEM (JSS) RADAR TOWER SITE

The Whitehouse JSS Radar Tower site consists of approximately 5 acres of Navy land which has been leased by the Federal Aviation Administration (FAA). The site is located off Halsema Road in Whitehouse, Florida. The FAA has operated the site since 1970 for air traffic control. The Air Force has jointly occupied the site since 1981. A new radar tower, owned by the Air Force, has recently been constructed for aircraft altitude determination. The site is currently a joint use facility for FAA air traffic control and Air Force air defense operations. All maintenance activities are performed by 14 FAA civilian personnel while the Air Force operates the air defense portion of the installation with eight Air Force military personnel assigned to the 20th Air Defense Squadron under the command of Ft. Lee AFS, Virginia.

Sanitary wastewater is disposed of onsite in a septic tank/drain field system. Water for potable and non-potable purposes is supplied by a well which is approximately 800 feet deep. Interviews with knowledgeable personnel at the site indicated that no present or past landfills or burial sites exist on the property and that no significant fuel, PCB, or solvent spills have occurred at the site.

Solid waste, mainly trash, is hauled offsite by a contractor for disposal. Small quantities of solvents are used for cleaning; these are consumed in use. The oil in two transformers was changed about 5 years ago. The spent transformer oil (15 gallons) was suspected of containing PCBs and was sent offsite to the Navy for disposal. Several existing transformers and capacitors are suspected of containing PCBs and they will have to be properly disposed of when they are taken out of service. No hazardous wastes are known to have been disposed of at the Whitehouse Tower site.

D. CROSS CITY JSS RADAR TOWER SITE

The Cross City JSS Radar Tower site consists of approximately 5 acres of FAA land and is located off State Road 351 approximately 8 miles northeast of Cross City, Florida. The site is similar to the Whitehouse Tower site and has been in operation for 4 years. The Air Force has jointly occupied the site for the past 2 years and owns a radar tower constructed for aircraft altitude determination. Total personnel includes 11 FAA civilians and seven Air Force civilian personnel.

Sanitary wastewater is disposed of onsite in a septic tank/drain field system while water for non-potable purposes is obtained from a shallow well. Bottled water is used for drinking purposes. Solid waste, primarily trash, is hauled offsite by a contractor for disposal. Interviews with knowledgeable personnel at the site indicated that no present or past landfills or burial sites exist on the property and that no fuel or PCB spills have occurred at the site. Since this facility is fairly new, no transformer oil has been changed at the site. The interviewees were not aware of any existing transformers or capacitors containing or suspected of containing PCBs. No hazardous wastes are known to have been disposed of at the site.

E. GRASSY POND RECREATIONAL ANNEX

The Grassy Pond Recreational Annex is located 25 miles southwest of Moody AFB, just 3 miles north of the Georgia/ Florida state line. This site consists of about 500 acres of land originally sold to the U.S. Government in 1928 for use as a fish hatchery facility (Figure 17, page VIII-17). In 1952, the U.S. Air Force began using the site and in 1954 it was designated as "fee-owned" property. Major surface features at the site include Grassy Pond (160 acres), Lot Pond (30 acres), and over 300 acres of upland forest and developed areas.

Grassy and Lot Ponds are natural water bodies that have been slightly modified by the construction of spillways. Drainage is from Lot Pond to Grassy Pond, and then to the aquifer by a natural sinkhole and two drainage wells. Aquatic weeds have frequently been a problem at these ponds because of their interference with recreational activities. Control measures for water hyacinth have included intensive spraying with Diquat and 2,4-D within the last year. The American alligator, a threatened species, resides in the ponds and southern bald eagles nest nearby and frequently feed at Grassy Pond.

Grassy Pond Recreational Annex has been used primarily as a relaxation/recreation site by the Air Force since 1952. Facilities at the site include a concession building with snack bar and tackle shop, a boat rental service, six cabins, covered picnic sites, and the caretaker's home. The main water supply is by a 4-inch well with a 2-inch backup well. Wastewater disposal is by septic tanks and drainage fields. A small landfill area is located at Grassy Pond Recreational Annex and was reportedly used only for domestic refuse generated onsite. Currently this landfill area is

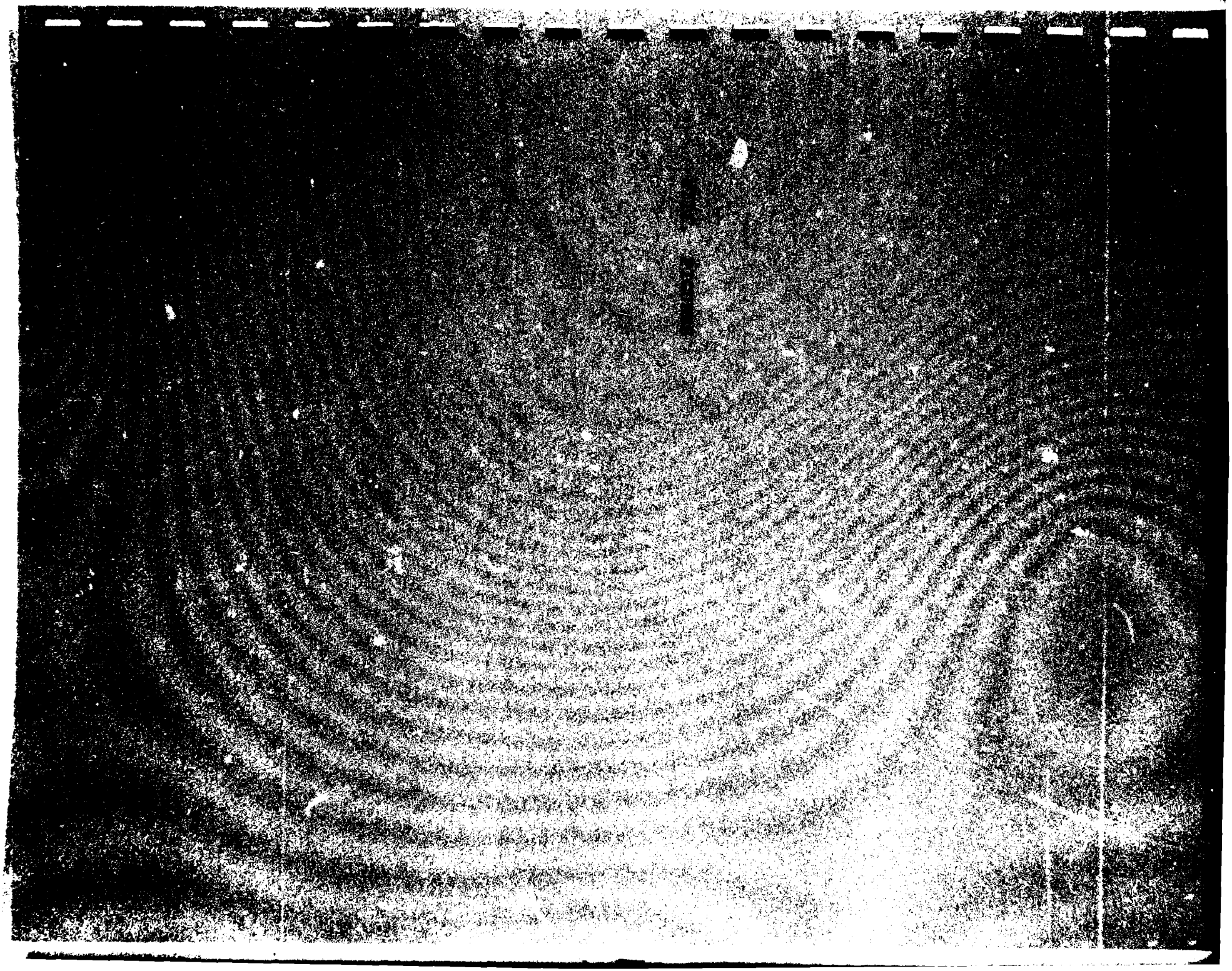
used for disposal of leaves and branches, while domestic refuse is hauled offsite by a contractor. No hazardous wastes are known to have been disposed of at this site.

G. CONCLUSIONS

The records search did not identify any past disposal or spill sites at any of the offsite installations.

H. RECOMMENDATIONS

Phase II monitoring is not recommended at any of the offsite installations.



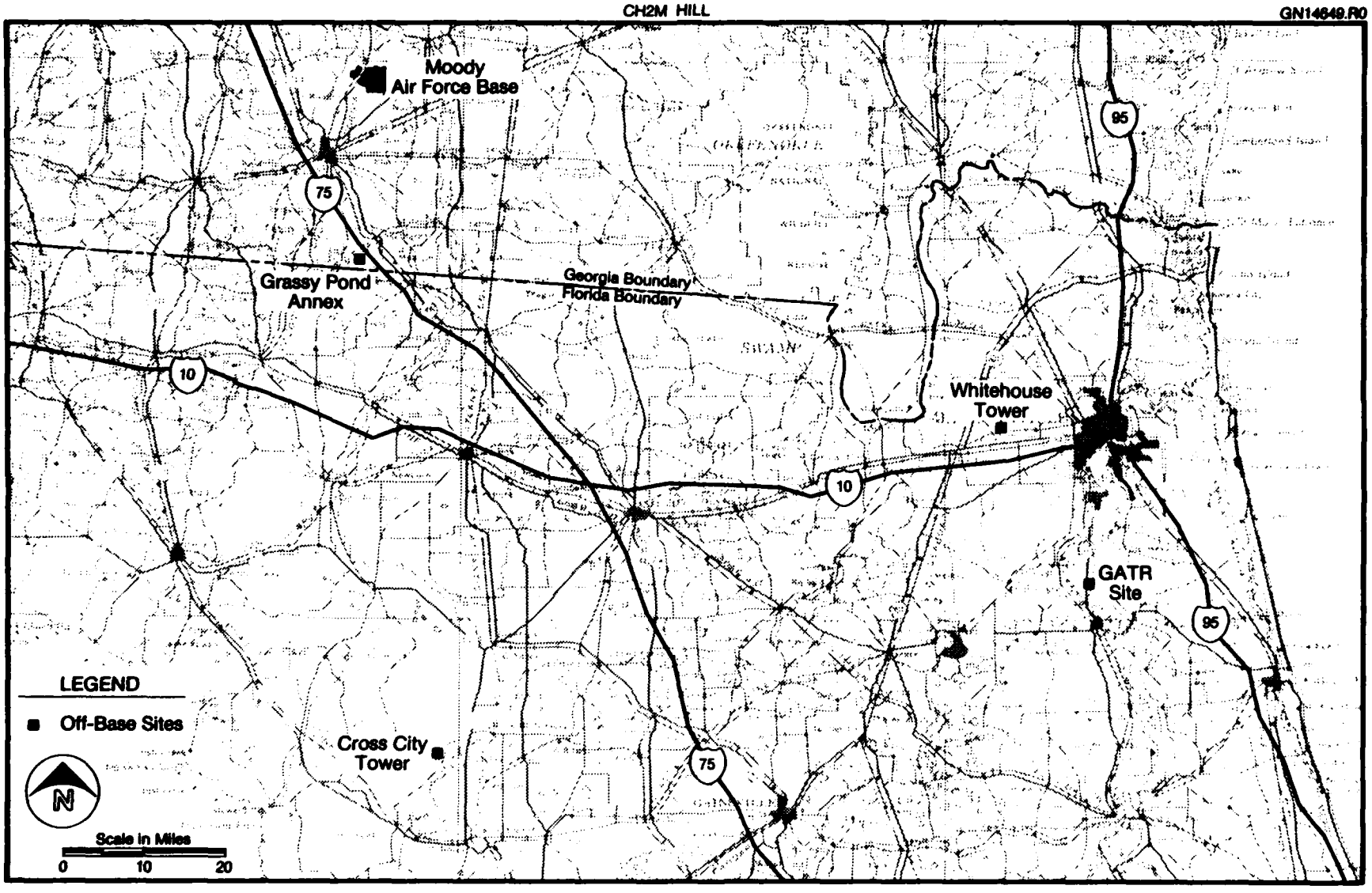


FIGURE 1. Location of Moody AFB, Grassy Pond Recreational Annex, Whitehouse and Cross City Towers, and GATR Site.

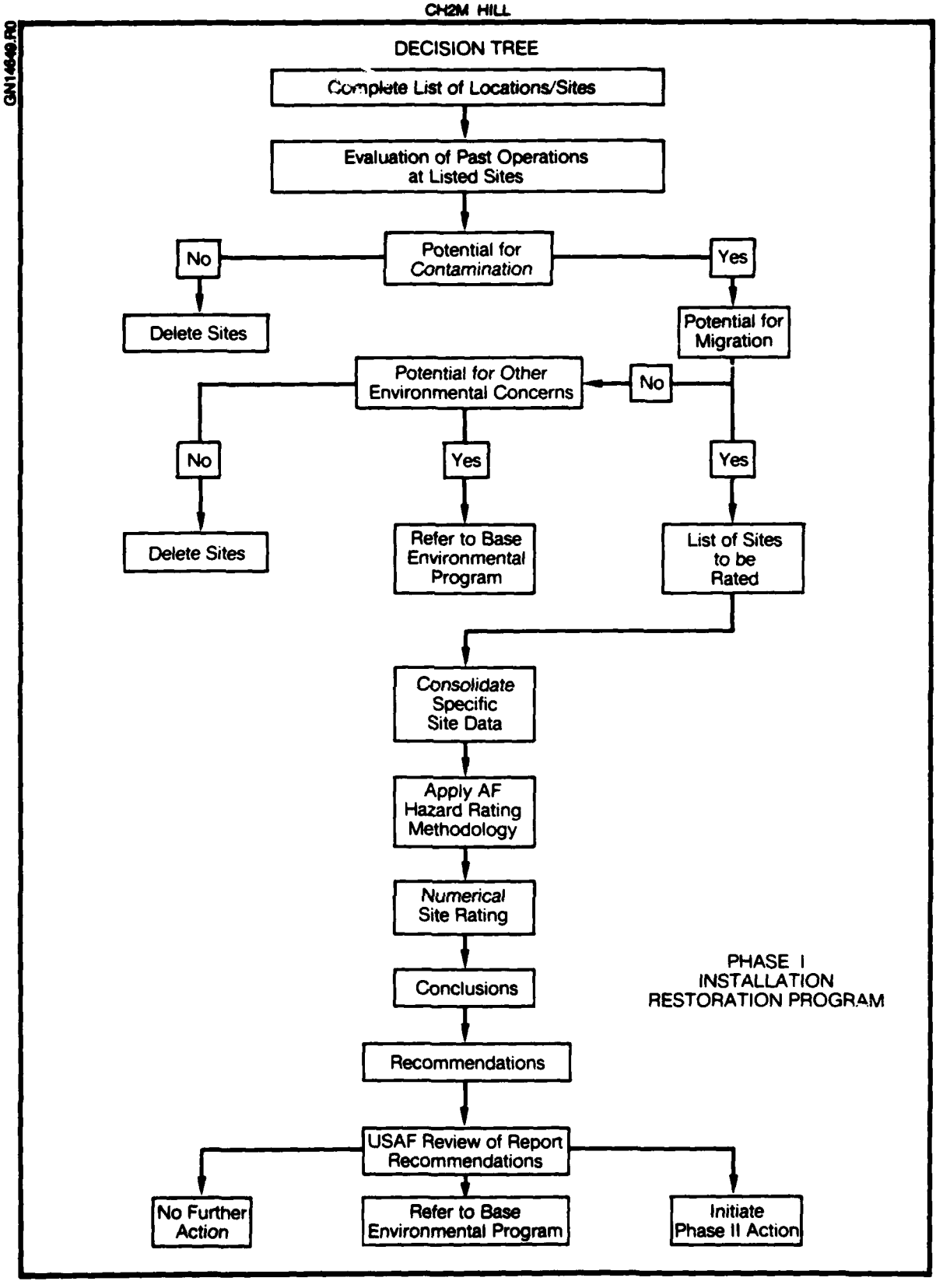


FIGURE 2. Records search methodology.

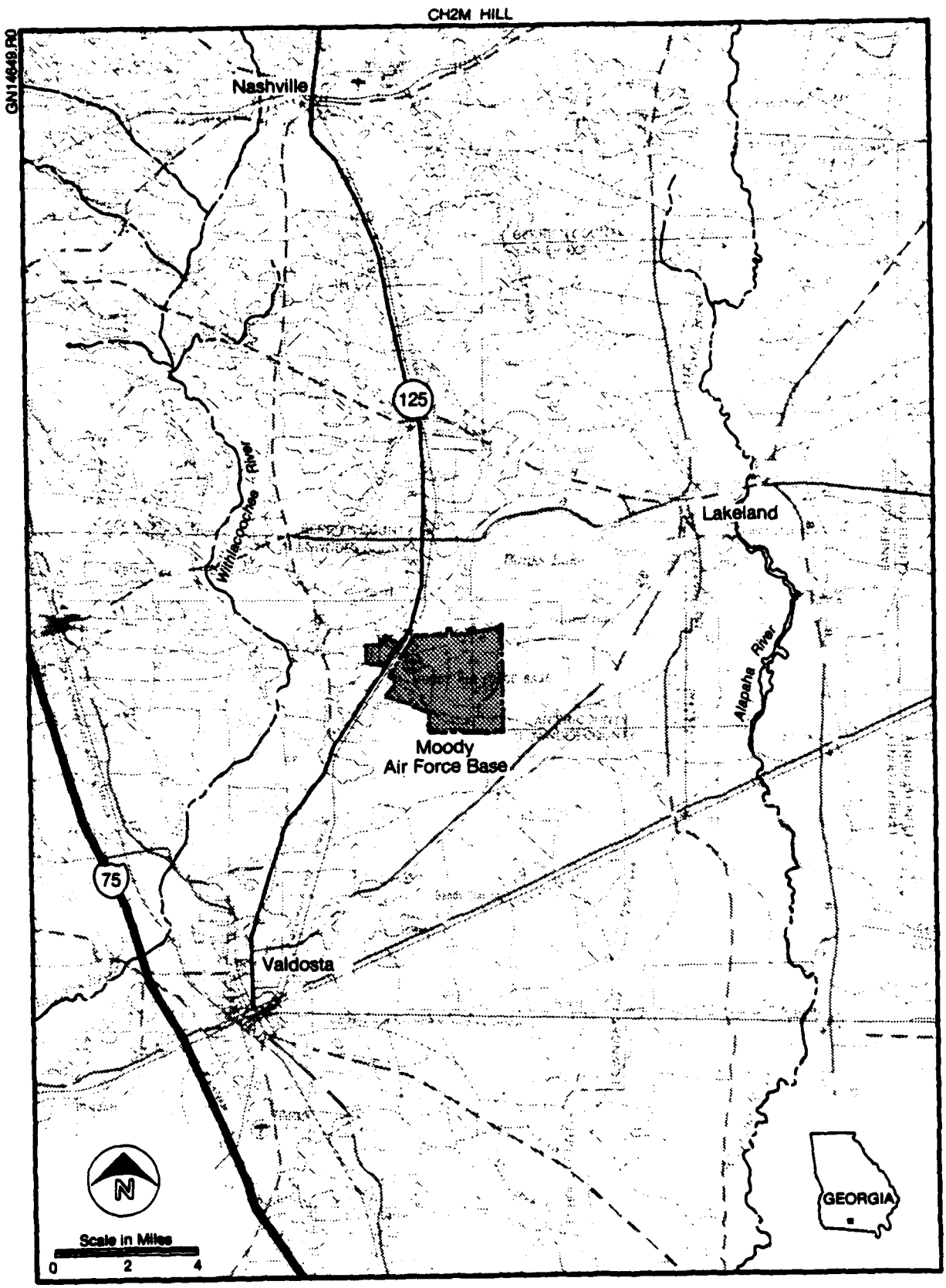


FIGURE 3. Location map of Moody AFB, Georgia.

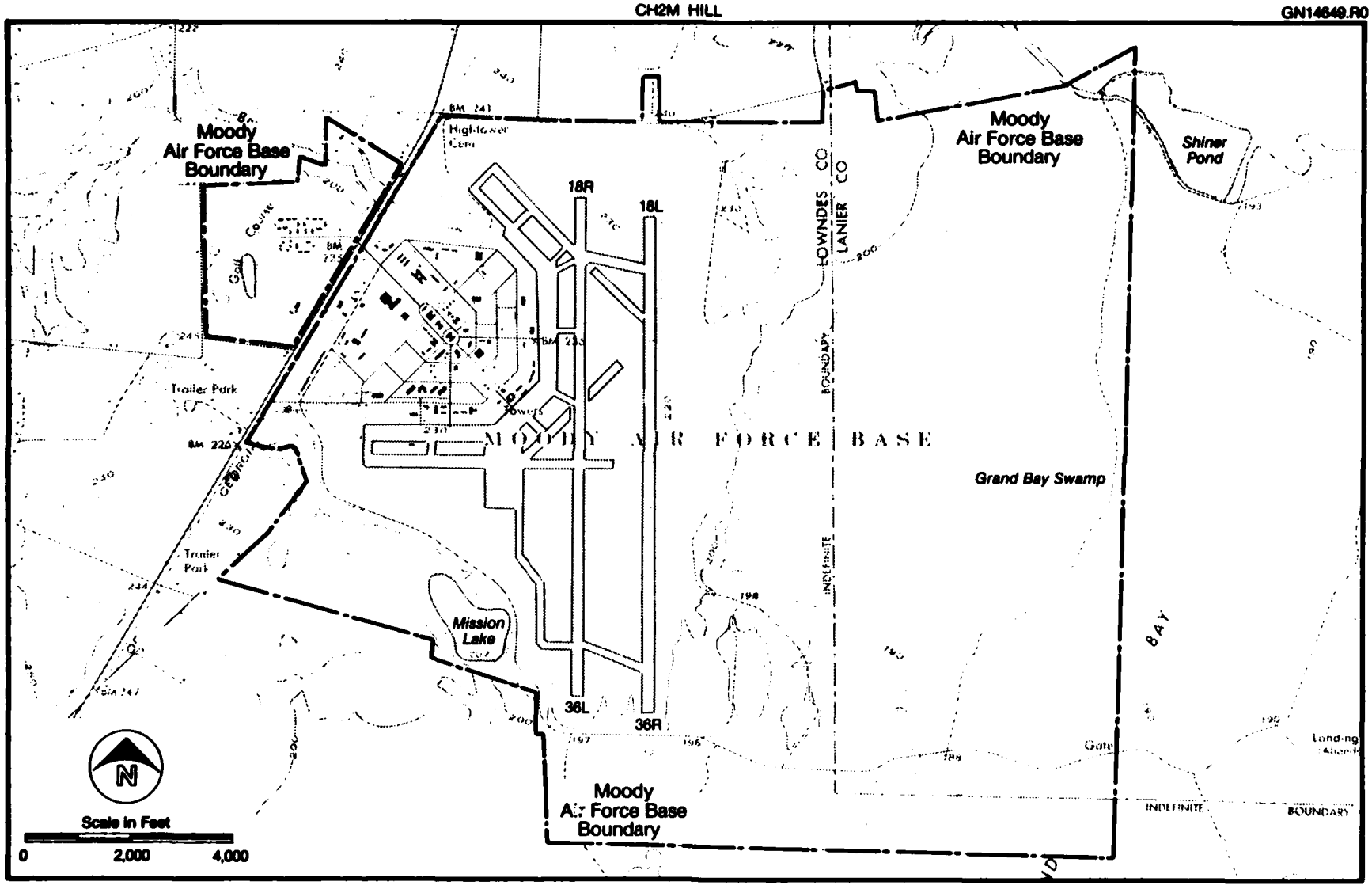


FIGURE 4. Site map of Moody AFB, Georgia.

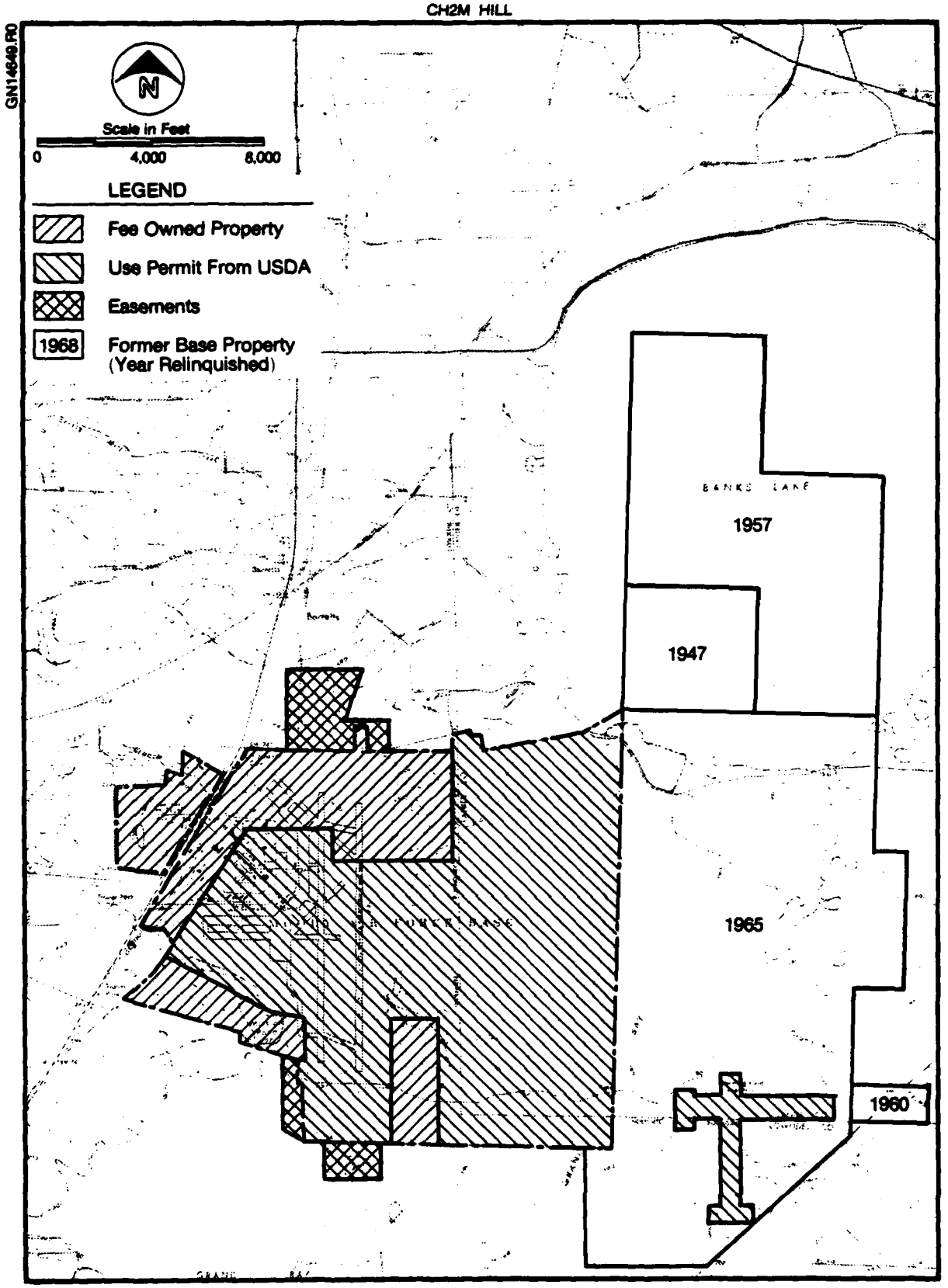


FIGURE 5. Air Force real estate interests at Moody AFB including former base boundaries.

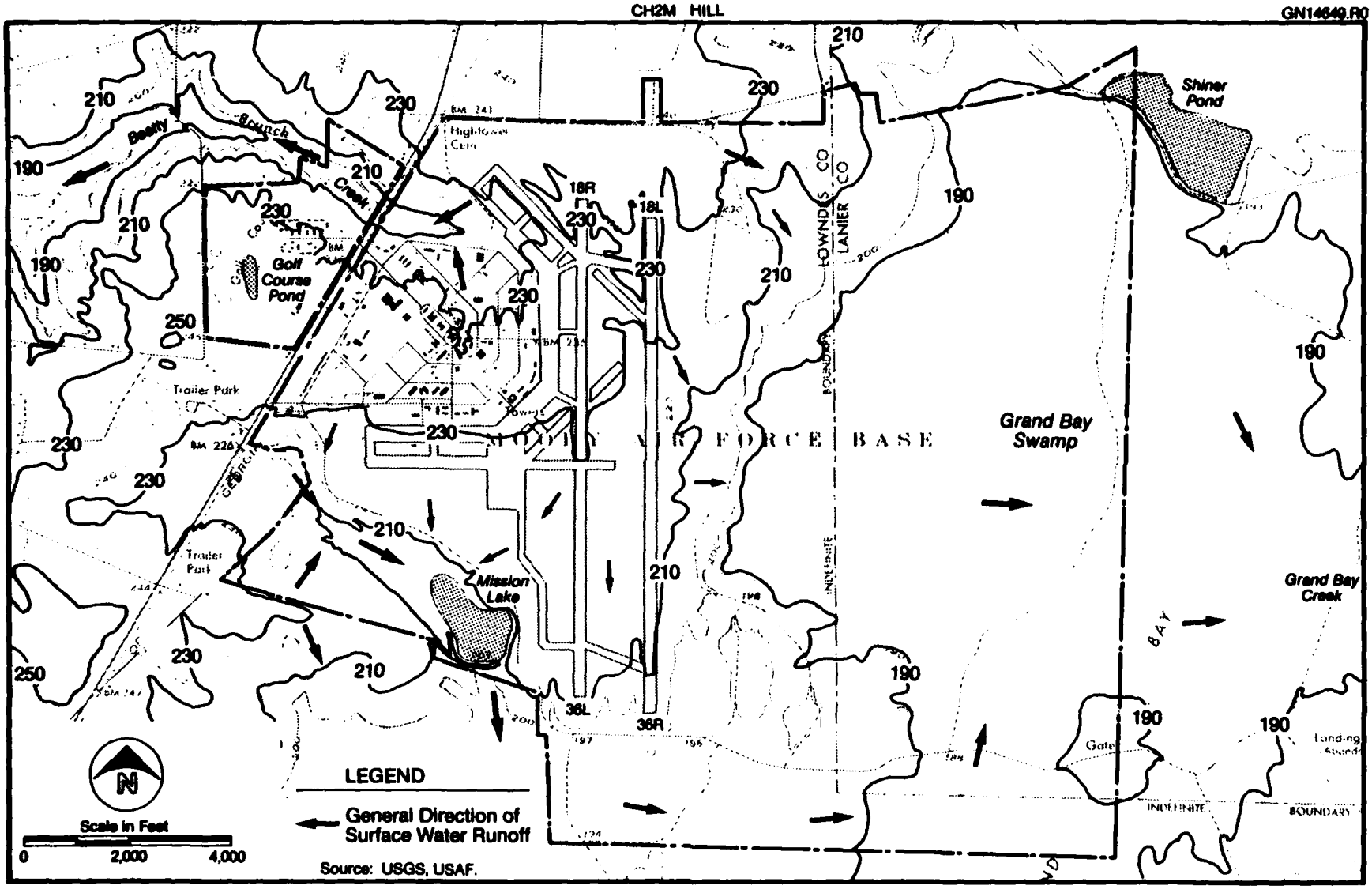


FIGURE 6. Topography and surface water feature map of Moody AFB, Georgia.

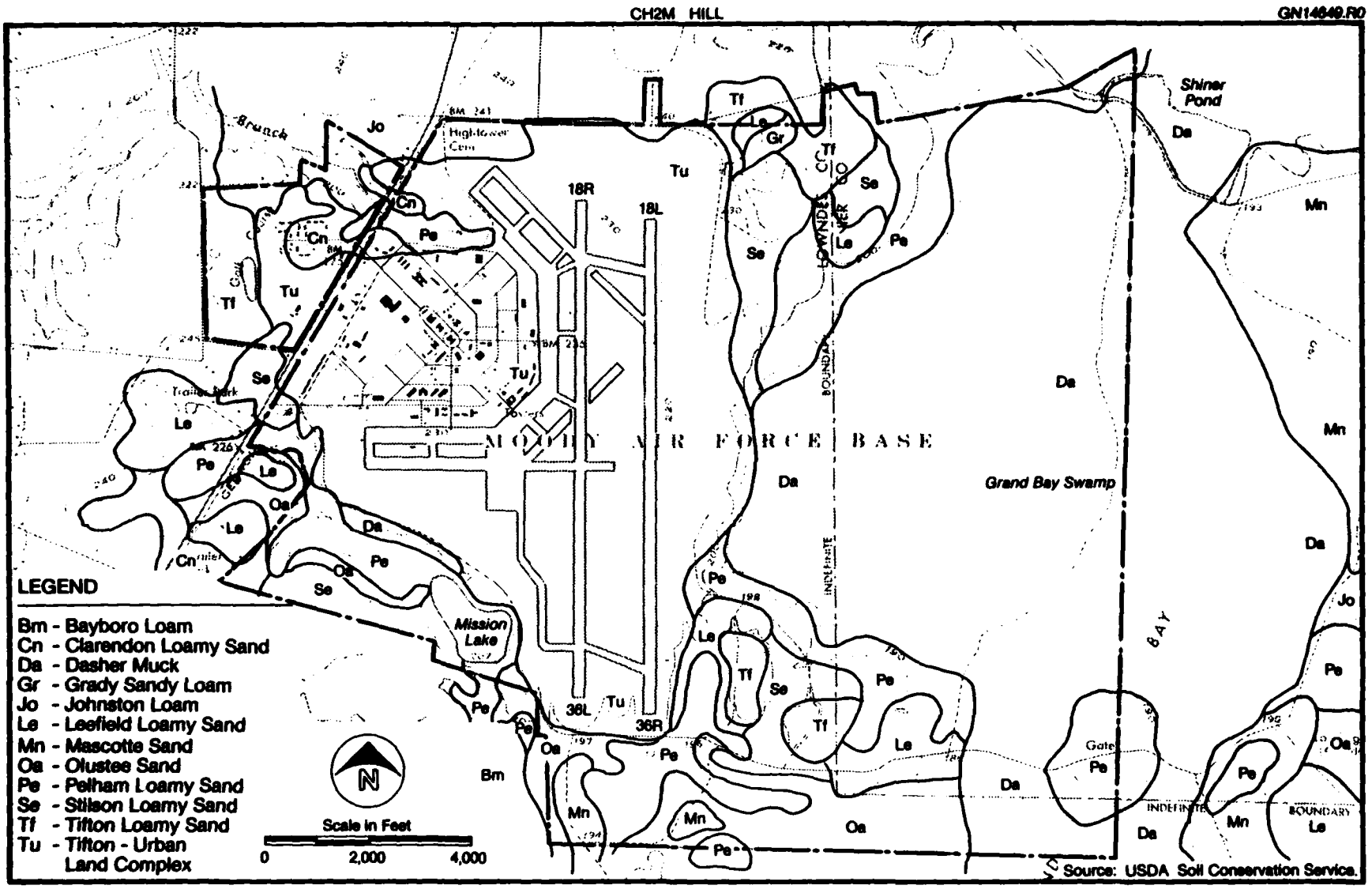


FIGURE 7. Surficial soils map of Moody AFB, Georgia.

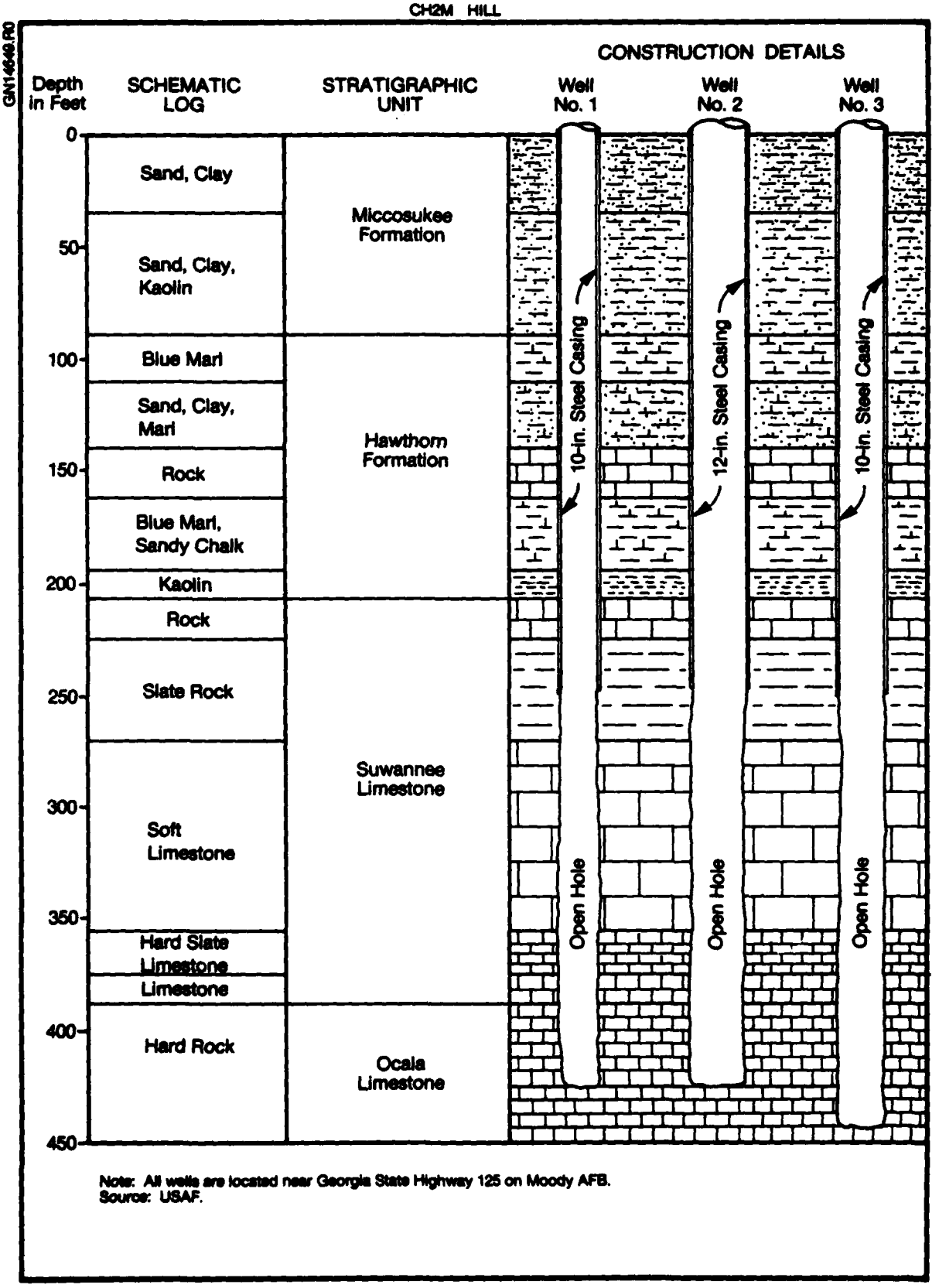


FIGURE 8. Schematic of stratigraphy and construction of major potable water wells at Moody AFB, Georgia.

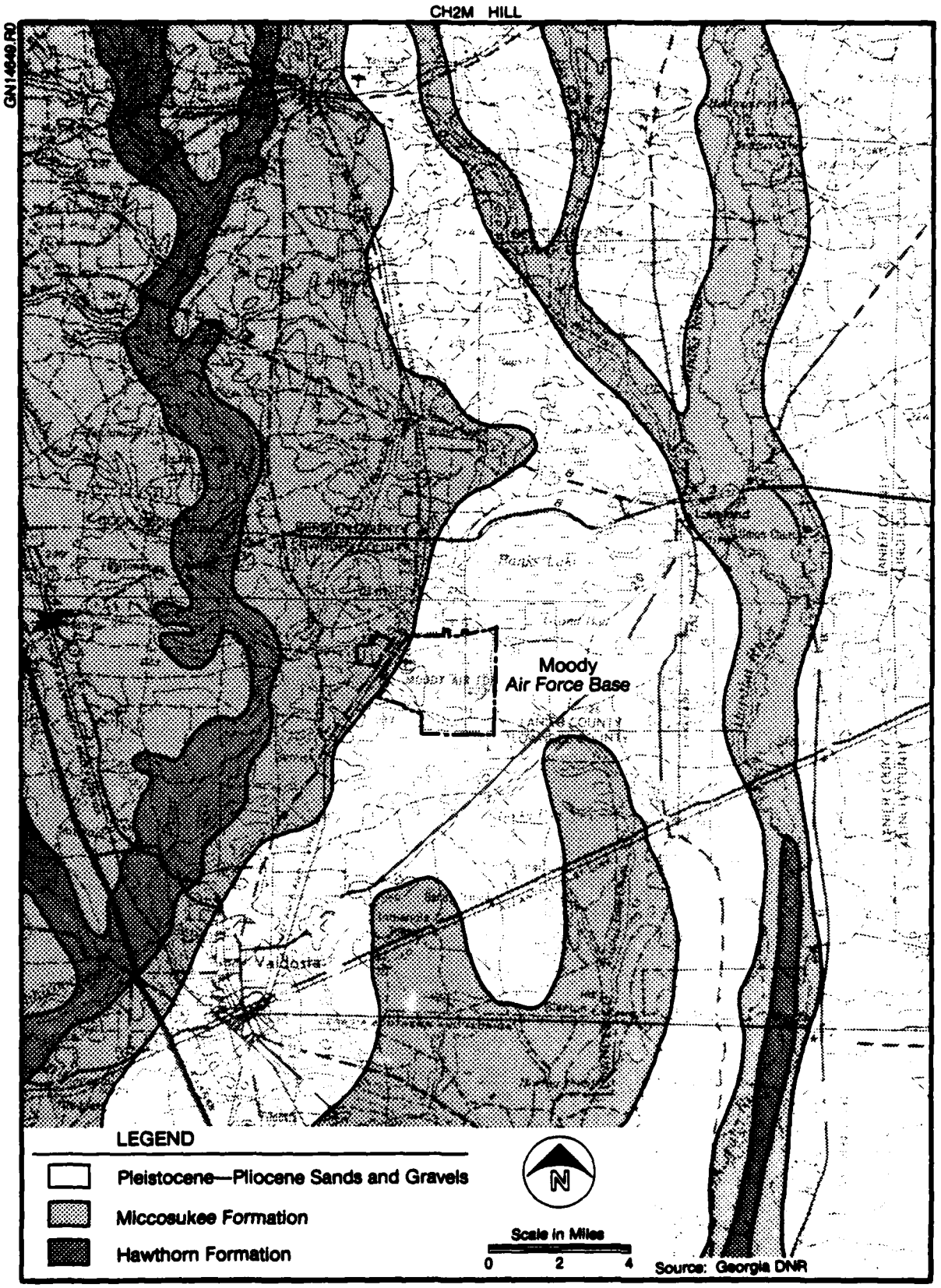


FIGURE 9. Geologic map of Moody AFB area.

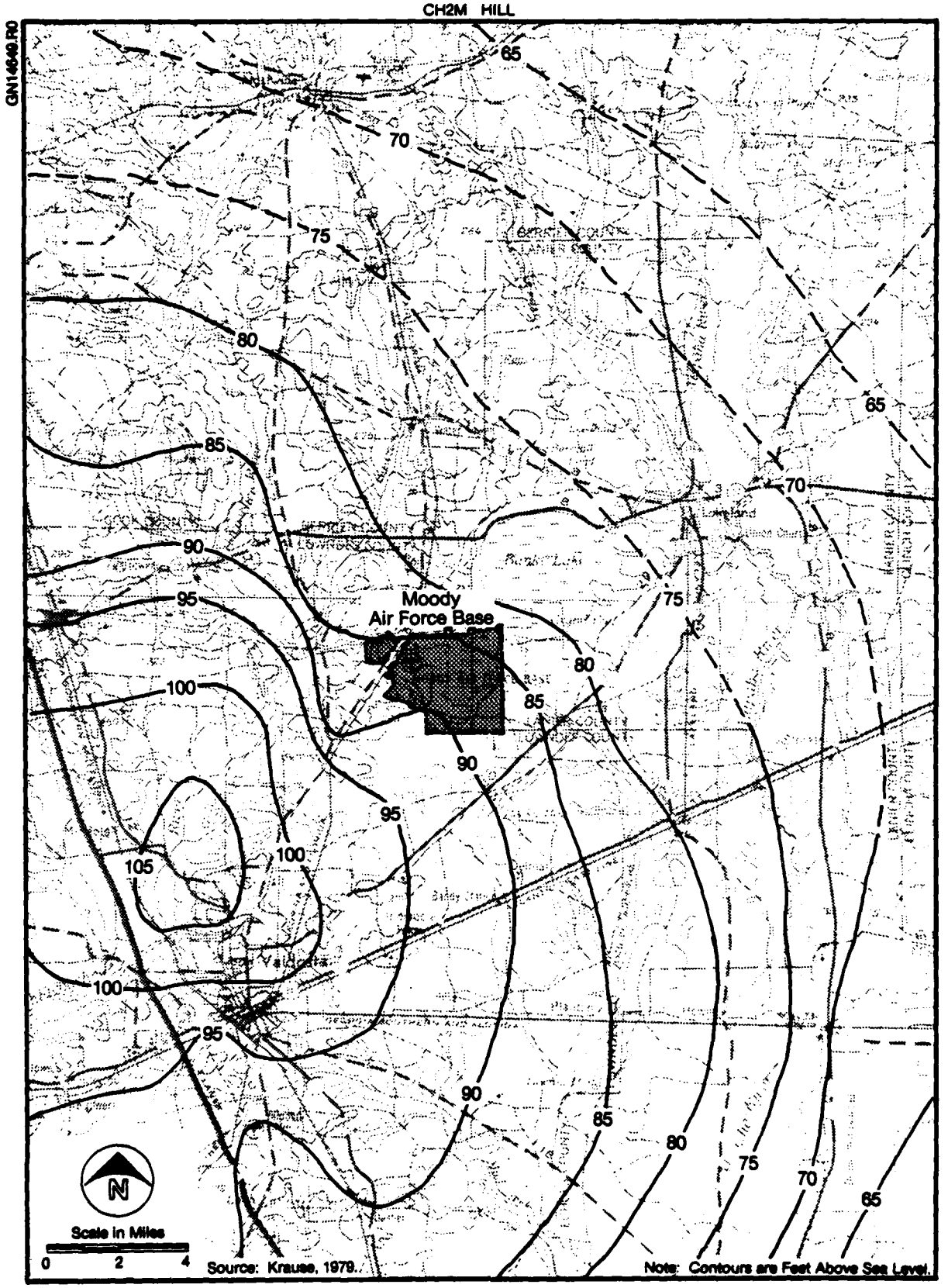


FIGURE 10. Potentiometric surface of the prinicipal artesian aquifer in the vicinity of Moody AFB, Georgia - May 1975.

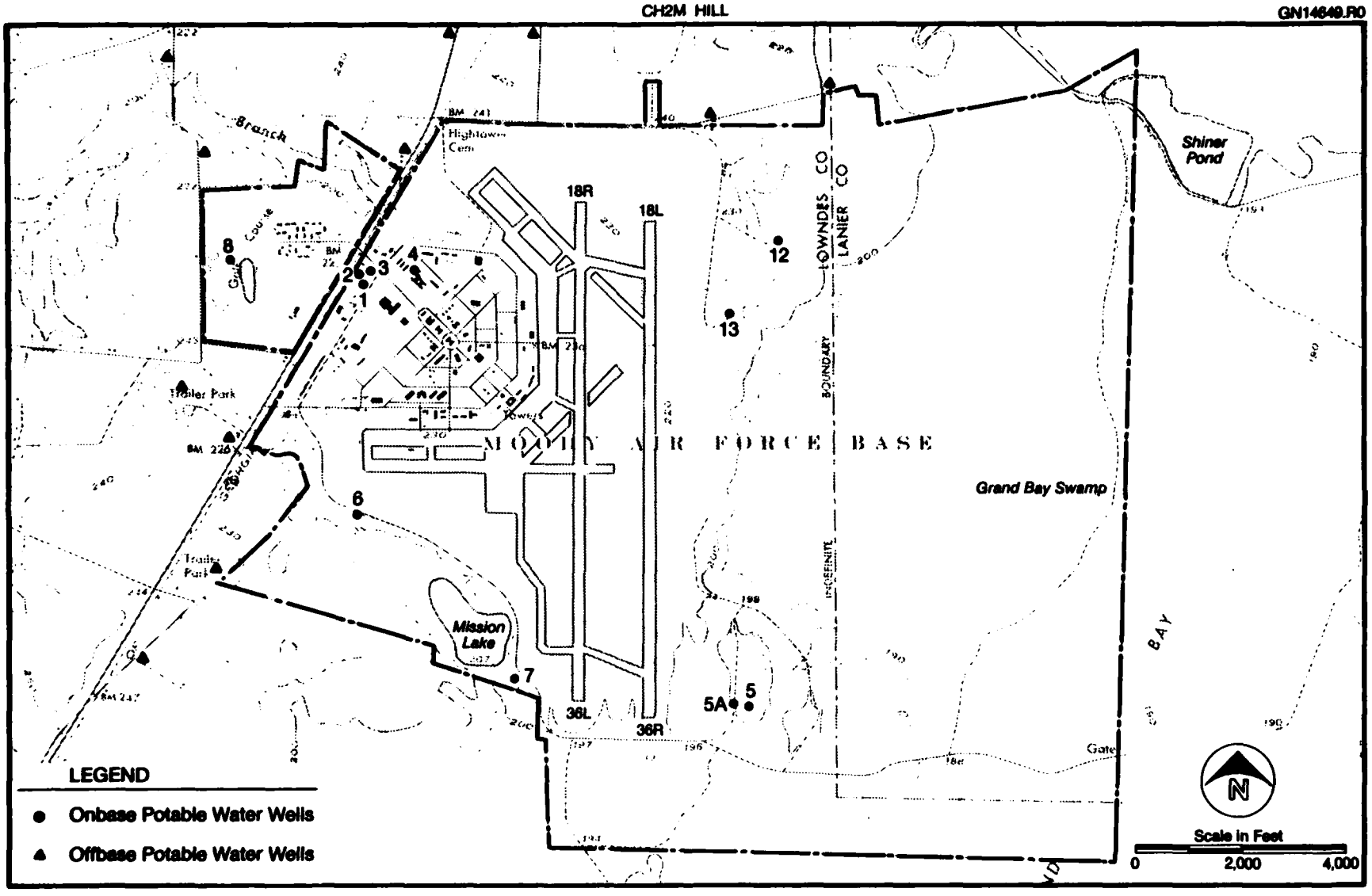


FIGURE 11. Location of water wells at Moody AFB, Georgia and vicinity.

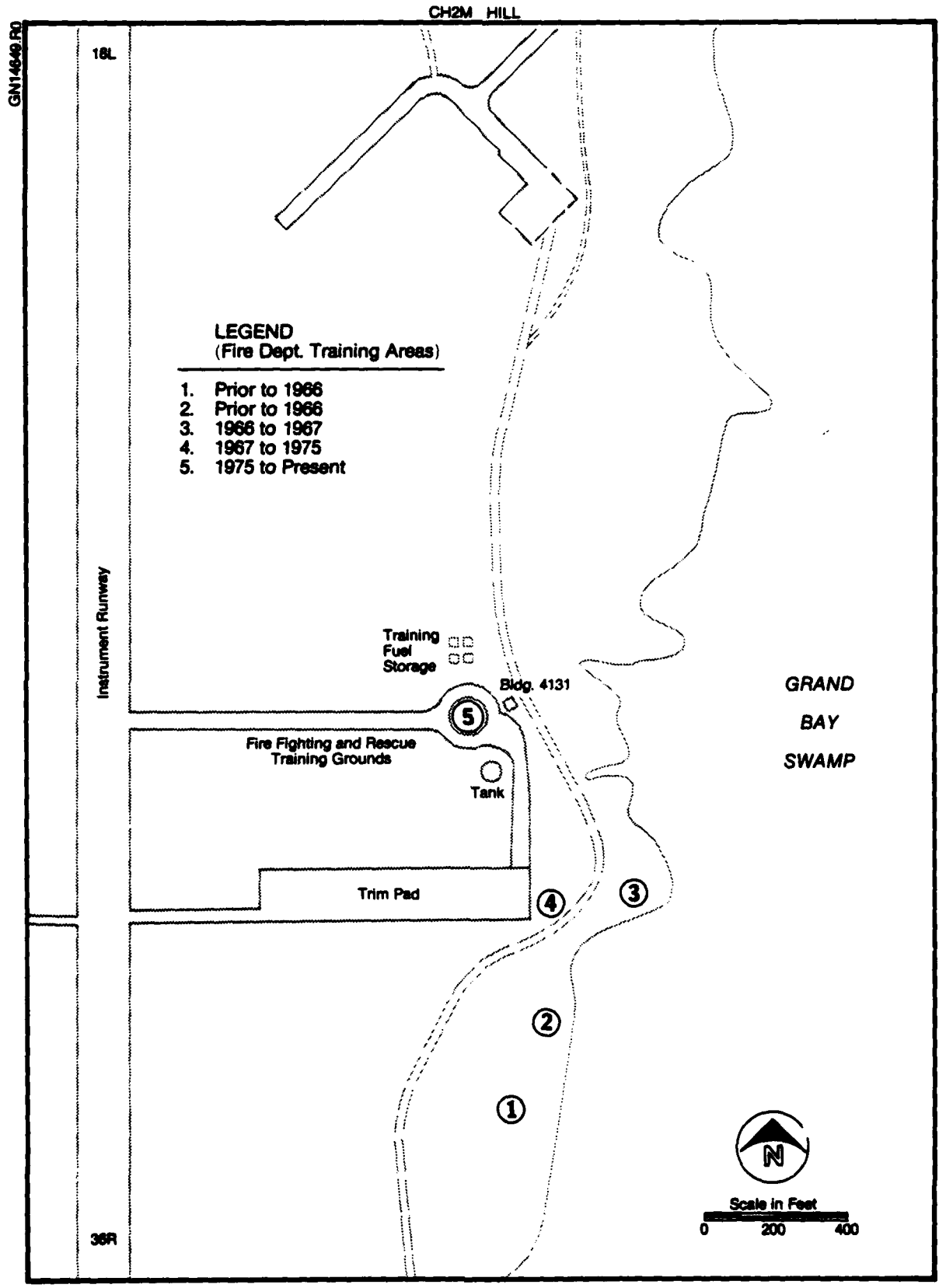


FIGURE 12. Location map of fire department training areas in the vicinity of the present site at Moody AFB, Georgia.

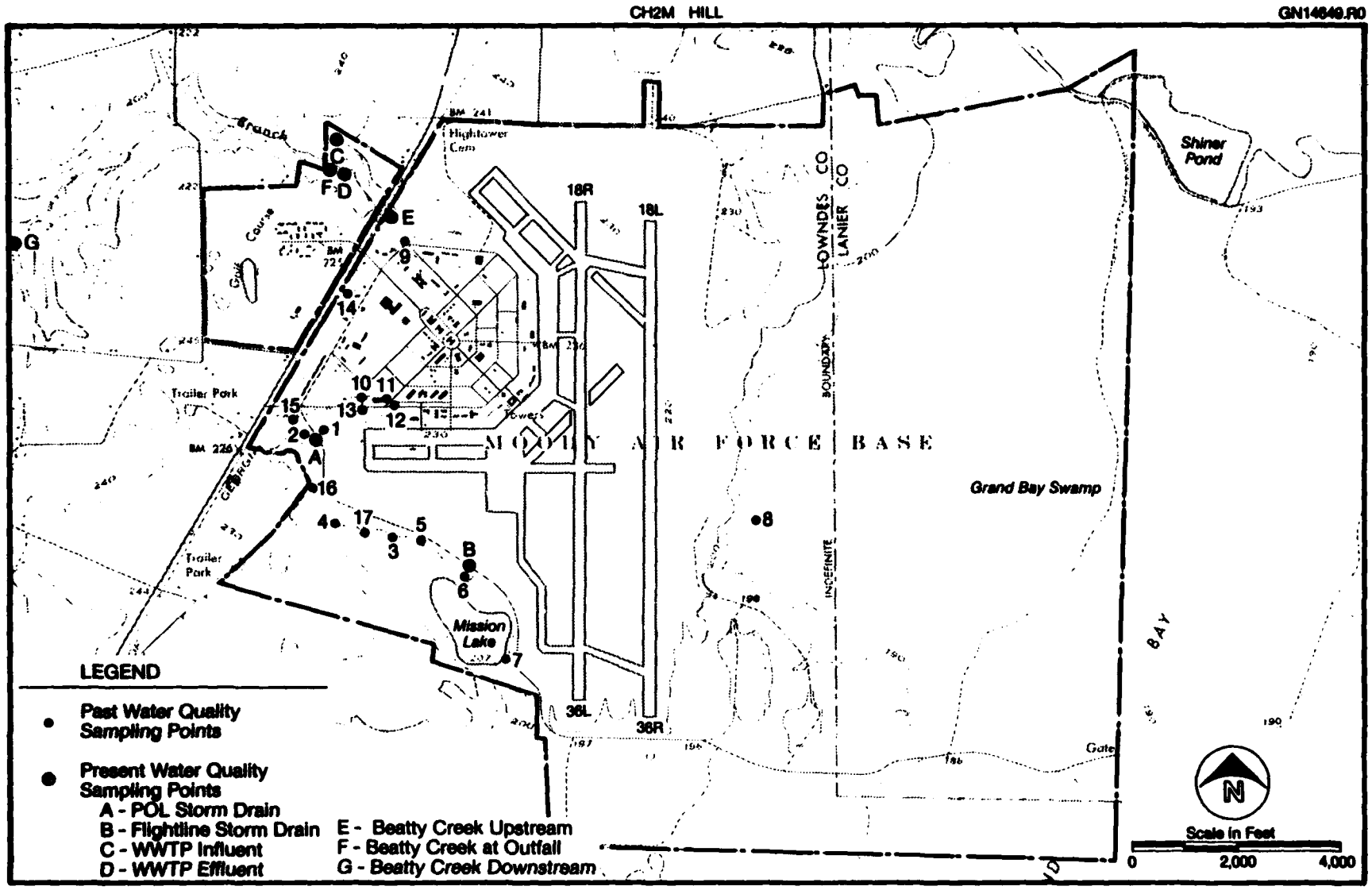


FIGURE 13. Location map of water quality sampling points at Moody AFB, Georgia.

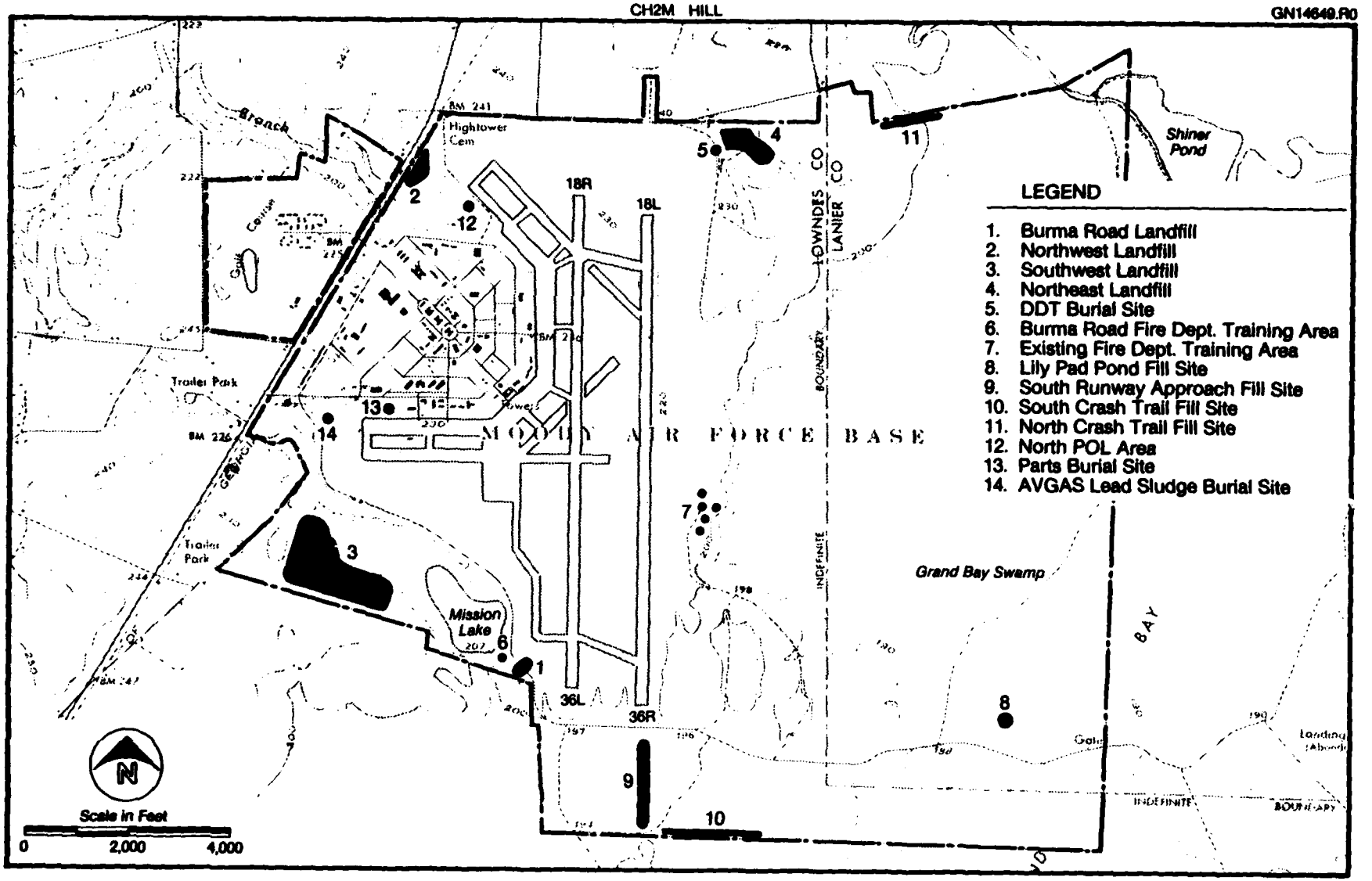


FIGURE 14. Location map of identified disposal and spill sites at Moody AFB, Georgia.

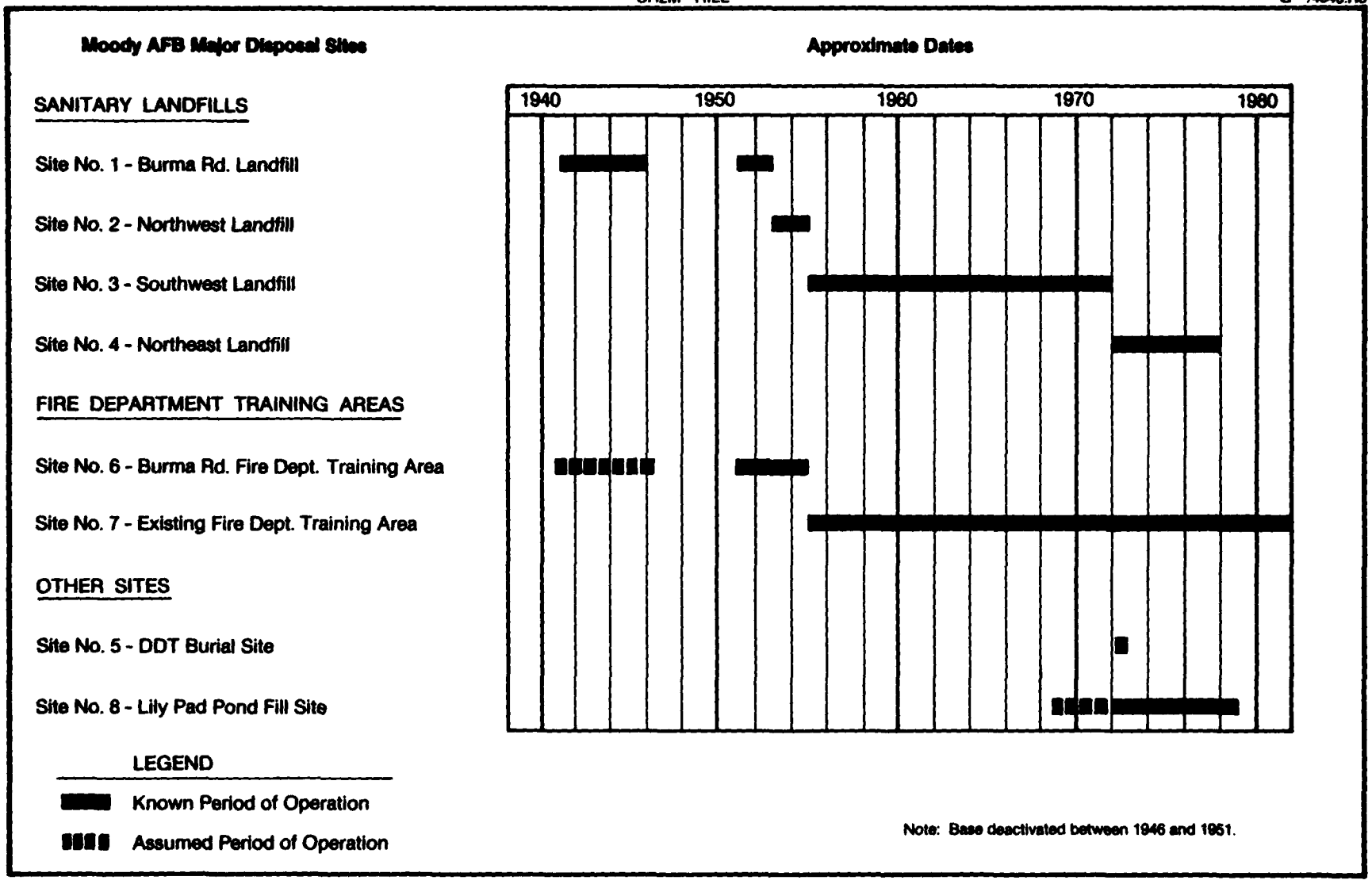


FIGURE 15. Historical summary of activities at major disposal sites at Moody AFB, Georgia—1941—1982.

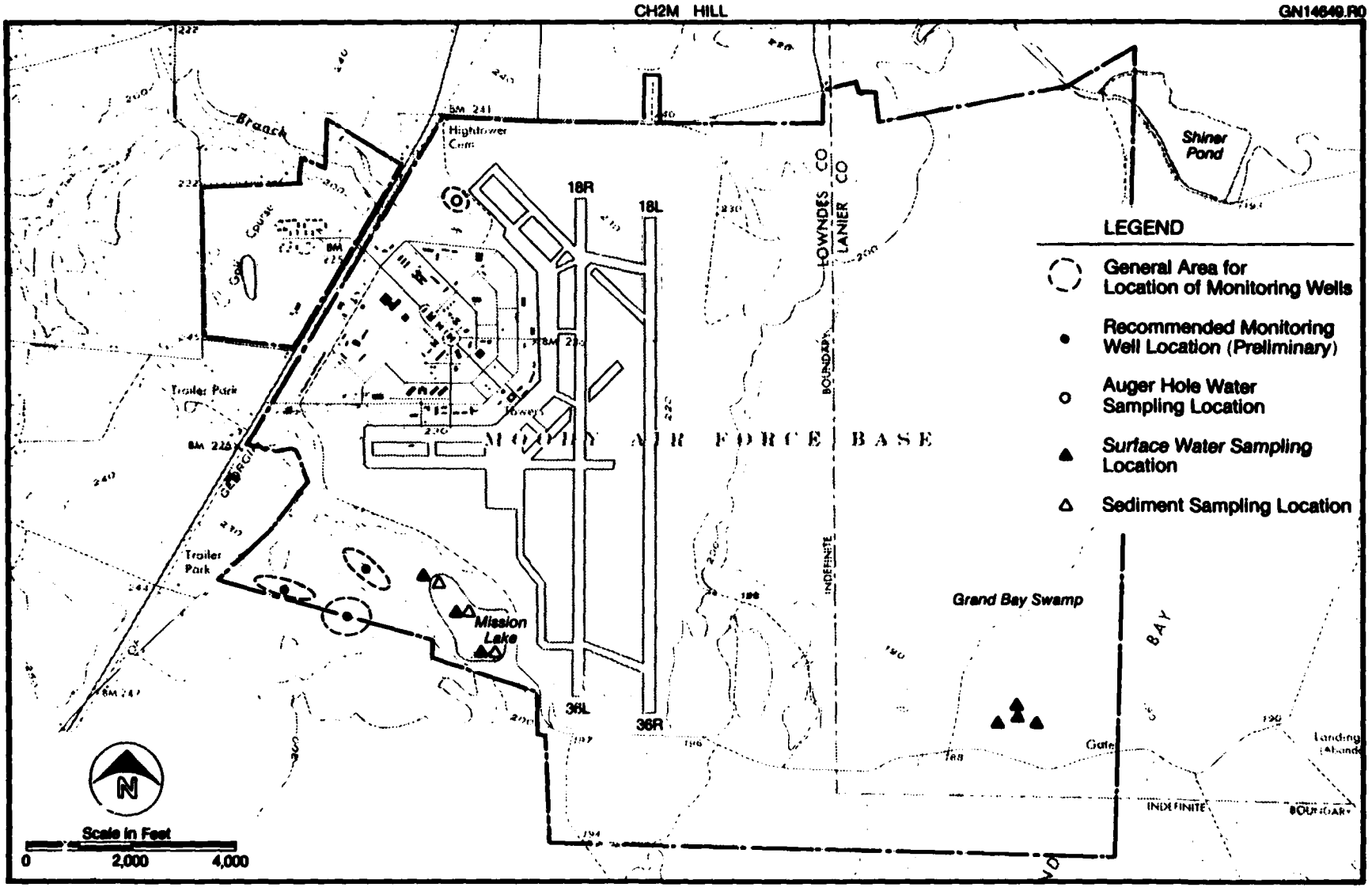


FIGURE 16. Preliminary recommended ground water, surface water, and sediment sampling locations at Moody AFB, Georgia.

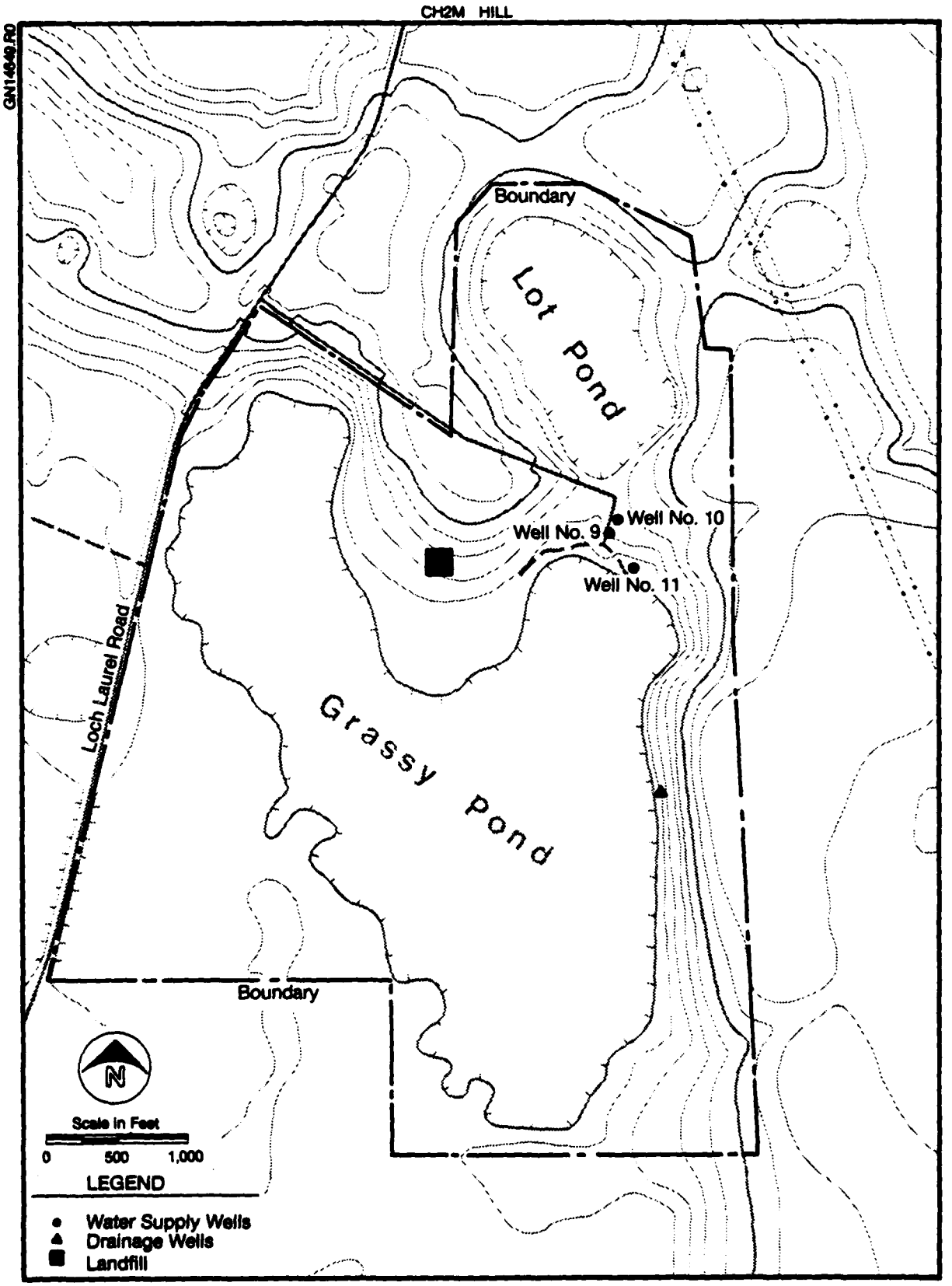


FIGURE 17. Site map of Grassy Pond Recreational Annex, 25 miles southwest of Moody AFB, Georgia.

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REFERENCES

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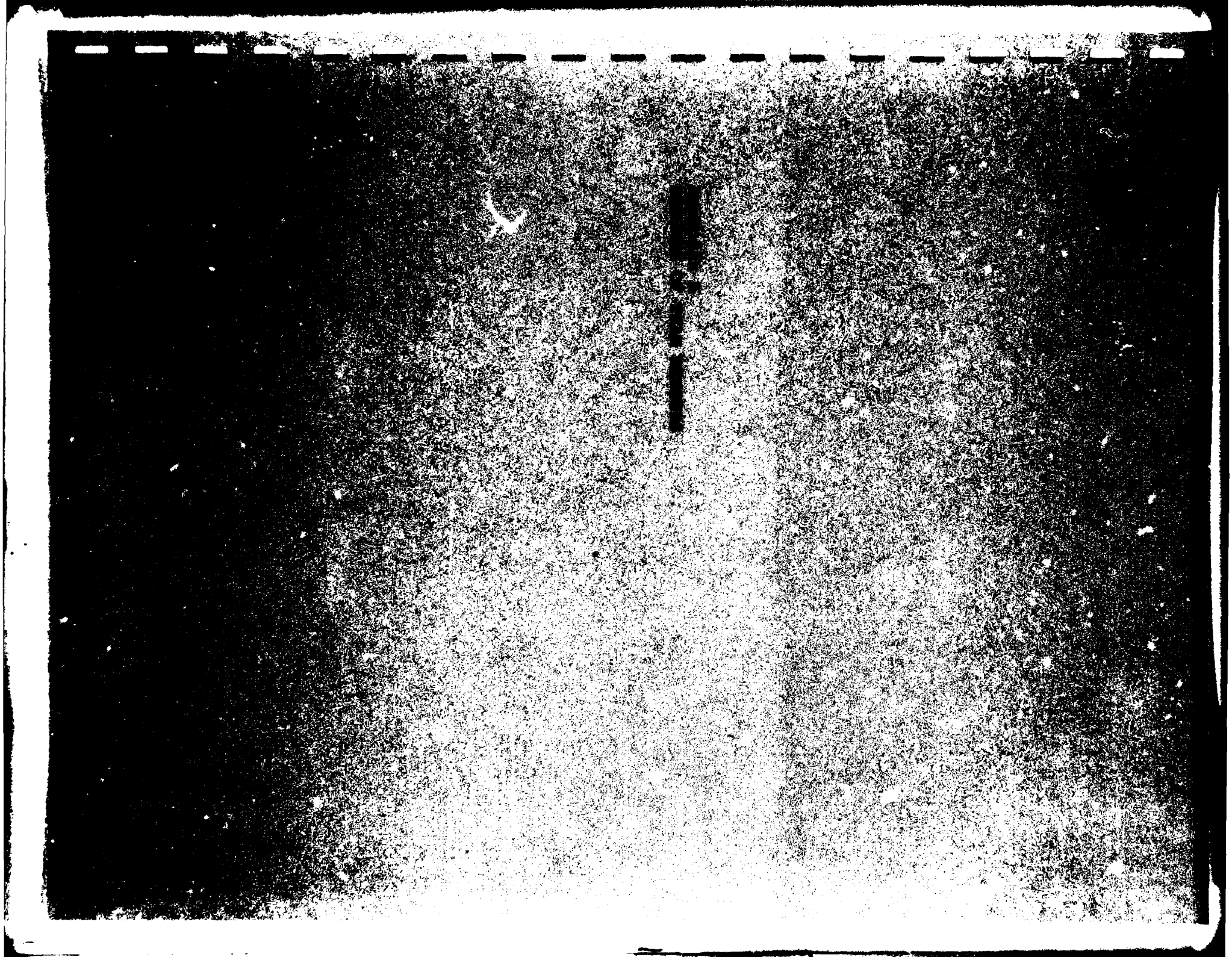

NORMAN N. HATCH, JR.
Industrial Wastewater and Hazardous Waste Projects Manager

Education

M.S., Environmental Engineering, University of Florida, 1973
M.S., Analytical Chemistry, University of Florida, 1972
B.S., Chemistry, University of New Hampshire, 1969

Experience

Mr. Hatch joined CH2M HILL in 1973 and is currently the Manager of the Industrial Wastewater Reclamation Department. His range of engineering experience includes hazardous waste projects, laboratory and pilot treatability studies, process design of industrial wastewater treatment facilities, and process design of municipal water and wastewater treatment facilities. Examples of his work include:

- Overall responsibility for hazardous materials disposal site records searches for 12 U.S. Air Force installations throughout the United States. The purpose of the records searches is to assess the potential for hazardous contaminant migration from past disposal practices and to recommend follow-up actions.

- Assistance in a comprehensive RCRA compliance program for Gulf Oil Company's Port Arthur Refinery.

- Project manager of a feasibility study for treatment of high nitrogen industrial wastewater from the Air Products and Chemicals, Inc., manufacturing facility in Pensacola, Florida. Treatment technologies investigated included aerated lagoons, oxidation ponds, anaerobic treatment ponds, spray irrigation, activated carbon, and air stripping.

- Project manager of a comprehensive treatability and process selection study for the American Cyanamid Fibers Division plant in Milton, Florida. Investigations included spray irrigation, deep well injection, activated sludge, rotating biological contactors, anerobic contact treatment, activated carbon, ion exhange, and chemical coagulation.

- Project manager for several other treatability and process selection studies for industrial clients including Arizona Chemical Company, Kaiser Agricultural Chemicals, Engelhard Industries, and Production Plating Company.

- Assistance in the negotiation of NPDES permits for Air Products and Chemicals, Inc., American Cyanamid, and Kaiser Agricultural Chemicals.

- Lead engineer on an ozone disinfection feasibility study for the City of Philadelphia's Queen Lane Water Treatment Plant. Also served as chief process engineer for the subsequent design of chemical feed systems at the Queen Lane Plant.

NORMAN N. HATCH, JR.

- Process design and design of chemical feed and sludge handling facilities for the Alexander City, Alabama, Water Treatment Plant.
- Process design and design of chemical feed system modifications for the St. Augustine, Florida, Water Treatment Plant.
- Project manager for the design of water treatment facilities, including lime softening, zeolite softening, and granular activated carbon adsorption for a sugar mill in south Florida.
- Project manager for development of a comprehensive water system master plan, including raw water supply, treatment, and distribution systems for the Fort Pierce Utilities Authority, Fort Pierce, Florida.
- Project manager for a feasibility study of direct wastewater reuse for potable water for the City of St. Petersburg, Florida.
- Project manager for the planning, supervision, and performance of pilot plant investigations for the removal of hydrogen sulfide from potable water for the Orlando Utilities Commission, Orlando, Florida.
- Cost-effective analysis and process selection for treatment of combined domestic and paper mill wastewater for the City of Harriman, Tennessee.
- Preparation of various segments of 201 facilities plans for Monroe County (Florida Keys); Lake City, Florida; Alachua County, Florida; Puerto Rico; and Live Oak, Florida.

Before joining CH2M HILL, Mr. Hatch was employed with the E.I. du Pont de Nemours Photo Products Plant in Parlin, New Jersey.

Membership in Organizations

Phi Beta Kappa
Phi Kappa Phi
Society of the Sigma Xi
Water Pollution Control Federation

Professional Engineer Registration

Florida
Georgia

BRUCE JAMES HAAS
Manager, Geotechnical Engineering

Education

M.S., Civil Engineering, University of Wisconsin, 1976
B.S., Civil Engineering, University of Wisconsin, 1975
Studies as exchange student, Technische Universitat,
Munich, West Germany, 1974-1975

Experience

Mr. Haas is responsible for field explorations and geotechnical investigations and for general earthwork design projects. His special knowledge of soils, sitework, and construction procedures has been instrumental in developing numerous efficient and economical civil engineering designs. Project experience includes site development, grading and drainage, streets and roadways, marinas, and hazardous waste disposal. Examples of project-related assignments include:

- Lead civil engineer in charge of stormwater management, site development, and geotechnical review for the new 130-mgd West County Wastewater Treatment Plant for the Louisville and Jefferson County Metropolitan Sewage District, Louisville, Kentucky.

- Geotechnical engineer responsible for geohydrologic reviews of various hazardous waste disposal facilities for the Agrico Chemical Company. The project involved assessment of ground-water pollution potential, design of monitoring systems, and preparation of closure and post-closure plans for agricultural chemical plants in Oklahoma, Louisiana, and Florida.

- Design geotechnical engineer and resident inspector for a 6-mgd wastewater treatment plant for the Grand Strand Water and Sewer Authority, Conway, South Carolina. Plant facilities and the 3,000-foot-long effluent pipeline were supported by timber piles.

- Civil and geotechnical engineer for marina improvements at the Oyster Water-Based Recreation Facility located in the tidal marshes of Northampton County, Virginia.

- Resident inspector for stabilization and reconstruction of existing sludge lagoon dikes for the Madison, Wisconsin, Metropolitan Sewerage District. This project involved the use of fabric reinforcement and light-weight wood chip fill for dikes located on highly compressible, low-strength marsh deposits.

Mr. Haas has performed foundation investigations and geotechnical designs for numerous major water and wastewater treatment plants at the following locations:

- Walt Disney World, Florida

- St. Petersburg, Florida

BRUCE JAMES HAAS

- Suffolk, Virginia
- Howard County, Maryland
- Harriman, Tennessee

These investigations have resulted in safe, economical design of foundation systems involving spread footings, piles, and construction preloads.

Professional Engineer Registration

Florida, Wisconsin

Membership in Organizations

American Society of Civil Engineers

Publications

"Proposed Criteria for Interpreting Stability of Lakeshore Bluffs," Engineering Geology, 1980, with T. B. Edil.

ROBERT L. KNIGHT
Ecologist

Education

B.A., Zoology, University of North Carolina, 1970
M.S.P.H., Environmental Chemistry and Biology, University of North Carolina, 1973
Ph.D., Systems Ecology, University of Florida, 1980

Experience

Dr. Knight's responsibilities at CH2M HILL involve all aspects of environmental study, including design and implementation of field studies, data analysis and interpretation, project management, environmental systems overview analysis, impact analysis, prediction, and assessment. His experience has covered a wide range of applied research problems in aquatic and terrestrial environments, including computer simulation analyses. Representative experience includes the following:

- Crystal River Power Plant Study—Managed and participated in field study of the effects of nuclear power plant operation on Crystal River estuarine metabolism.
- Heavy Metal Toxicity Studies—Participated in design and implementation of long-term studies of fate and effects of cadmium and mercury at low levels in stream microcosms. Prepared toxicity simulation model for cadmium and developed general quantification techniques of toxicity in biological systems.
- Environmental Systems Overview Analysis—Prepared and simulated quantitative overview models for Coosa River EIS and for Indian River Power Plant impacts.
- Silver Springs Study—Performed extensive field work at Silver Springs, Florida, to investigate the relationship between plant productivity and consumer organisms. Developed new microcosm design for study of flowing aquatic systems.
- Wetland Waste Assimilation Studies—Conducted feasibility and research studies on the use of natural and artificial wetlands for assimilation of domestic wastewaters. Wetland systems include *Spartina* salt marshes in North Carolina, hardwood swamp and prairie wetlands in Florida, and pocosin systems in South Carolina.
- Hazardous Waste Studies—Assessed environmental impacts of hazardous waste disposal at a number of Air Force bases, nationwide.
- Phytoplankton Research—Performed field verification studies of Algal Assay Procedure. Studied effects of power plant entrainment on phytoplankton numbers and diversity. Provided enumeration and taxonomy of Suwannee River phytoplankton.

ROBERT L. KNIGHT

Publications

Dr. Knight has authored several technical papers on ecosystem metabolism, phytoplankton ecology, and heavy metal dynamics in aquatic systems. Representative papers include:

"In Defense of Ecosystems," (Coauthor D. Swaney). *American Naturalist*, 117:991-992, 1981.

"A Control Hypothesis for Ecosystems—Energetics and Quantification with the Toxic Metal Cadmium." In: W. Mitsch, R. W. Bosserman, and J. M. Klopatek (eds.) *Energy and Ecological Modelling*. Elsevier Publishing Co. pp. 601-615, 1981.

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Fate and Biological Effects of Mercury Introduced into Artificial Streams. (Coauthors H. J. Kania and and R. J. Beyers). EPA-600/3-76-060. U.S. EPA, Athens, Georgia. 1976.

Effects of Entrainment and Thermal Shock on Phytoplankton Numbers and Diversity. Department of Environmental Sciences and Engineering, Publication 336, University of North Carolina, Chapel Hill. 1973.

Appendix B
COASTLINE AGENCY CONTACT LIST

Appendix B
OUTSIDE AGENCY CONTACT LIST

1. U.S. Fish and Wildlife Service, Georgia
   Wildlife Biologist
   Brunswick, Georgia
   Mr. Ron Freeman
   912/265-7778

2. U.S. Fish and Wildlife Service, Endangered
   Species Program
   Jacksonville, Florida
   Mr. Don Palmer
   904/791-2580

3. Georgia Department of Natural Resources
   Game and Fish Division
   Regional Supervisor
   Waycross, Georgia
   Mr. Dan Holder
   912/285-6094

4. Georgia Department of Natural Resources
   Game and Fish Division
   Fitzgerald, Georgia
   Mr. Frank Parrish, Game Biologist
   Mr. Mike Geihsler, Fisheries Biologist
   912/423-7211

5. Georgia Department of Natural Resources
   Game and Fish Division
   Non-Game Endangered Wildlife
   Social Circle, Georgia
   Mr. Ron Odom, Mr. Jim Armstrong
   404/557-2532

6. Georgia Department of Natural Resources
   Game and Fish Division
   Protected Plants Program
   Atlanta, Georgia
   Ms. Marianne Young
   404/656-4993

7. Georgia Department of Natural Resources
   Environmental Protection Division
   Industrial and Hazardous Wastes
   Atlanta, Georgia
   Ms. Renee Hudson
   404/656-7802

8. Georgia Department of Natural Resources
Environmental Protection Division
Industrial Water Quality
Atlanta, Georgia
Mr. John Rice
404/656-4887

9. Georgia Department of Natural Resources
Environmental Protection Division
Water Protection Branch
Atlanta, Georgia
Mr. Edward Urheim
404/656-5660

10. Georgia Department of Natural Resources
Environmental Protection Division
Local Environmental Specialist
2024 Newton Road
Albany, Georgia
Mr. Ken Shepard
912/439-4144

11. U.S. Environmental Protection Agency
Region IV
Federal Facilities Coordinator
Atlanta, Georgia
Mr. Arthur Linton
404/881-3776

12. U.S. Geological Survey
Water Resources Division
Doraville, Georgia
Mr. Richard Krause
404/221-4858

13. U.S. Forest Service
District Ranger
Monticello, Georgia
Mr. John Moore
404/468-2244

14. U.S. Department of Agriculture
Soil Conservation Service
Lowndes County
Valdosta, Georgia
Mr. Edwin Deariso
912/242-0841

15. U.S. Department of Agriculture
Soil Conservation Service
Lanier County
Lakeland, Georgia
Mr. Bob Joyce
912/482-3440

16. Lowndes County Extension Service
Valdosta, Georgia
Mr. John Baker
912/242-1858

17. Lowndes County Health Department
Environmental Health Section
Valdosta, Georgia
912/247-3487

18. Coastal Plain Area Planning and Development Commission
Executive Director
Valdosta, Georgia
Mr. Hal A. Davis
912/247-3454

19. Valdosta State College
Biology Department
Valdosta, Georgia
Dr. William Cribbs, Dr. Wayne Faircloth
912/247-3287

Appendix C
MOODY AFB RECORDS SEARCH
INTERVIEW LIST

Appendix C
MOODY AFB RECORDS SEARCH INTERVIEW LIST

Interviewee	Area of Knowledge	Years at Installation
1	Base Construction Management	25
2	Roads/Grounds	27
3	Roads/Grounds	23
4	Roads/Grounds	18
5	Water/Wastewater	21
6	Water/Wastewater	17
7	Golf Course	15
8	Entomology	14
9	Bioenvironmental Engineering	4
10	Bioenvironmental Engineering	1
11	Explosive Ordnance Disposal	4
12	General Base (Electrical Shop/Civil Engineering	26
13	Transient Aircraft/Flightline	30
14	Transient Aircraft/Flightline	30
15	Transient Aircraft	12
16	Interior Electric Shop	14
17	Real Property	32
18	Field Maintenance/Civil Engineering	39
19	Aircraft Maintenance, Base Supply	26
20	Fuel Oil	29
21	Aircraft Maintenance	4
22	Civil Engineering	31
23	Aircraft Maintenance	27
24	Civil Engineering	24
25	Fire Department	30
26	Fire Department	25
27	Exterior Electric	24
28	Operations	8
29	Environmental Coordinator	2
30	Equipment Maintenance Squadron	5
31	Fuels Management	26
32	DPDO	13
33	DPDO	4
34	Commissary/Engine Shop	9
35	Engine Shop	10
36	Grassy Pond	4
37	GATR Site	2
38	GATR Site	1
39	Whitehouse Tower	11
40	Whitehouse Tower	8
41	Whitehouse Tower	8
42	Cross City Tower	4
43	Cross City Tower	3

Appendix D
HAZARD ASSESSMENT RATING METHODOLOGY

USAF INSTALLATION RESTORATION PROGRAM
HAZARD ASSESSMENT RATING METHODOLOGY

BACKGROUND

The Department of Defense (DoD) has established a comprehensive program to identify, evaluate, and control problems associated with past disposal practices at DoD facilities. One of the actions required under this program is to:

> "develop and maintain a priority listing of contaminated installations and facilities for remedial action based on potential hazard to public health, welfare, and environmental impacts." (Reference: DEQPPM 81-5, 11 December 1981).

Accordingly, the United States Air Force (USAF) has sought to establish a system to set priorities for taking further actions at sites based upon information gathered during the Records Search phase of its Installation Restoration Program (IRP).

The first site rating model was developed in June 1981 at a meeting with representatives from USAF Occupational and Environmental Health Laboratory (OEHL), Air Force Engineering and Services Center (AFESC), Engineering-Science (ES) and CH2M HILL The basis for this model was a system developed for EPA by JRB Associates of McLean, Virginia. The JRB model was modified to meet Air Force needs.

After using this model for 6 months at over 20 Air Force installations, certain inadequacies became apparent. Therefore, on January 26 and 27, 1982, representatives of USAF OEHL, AFESC, various major commands, Engineering

Science, and CH2M HILL met to address the inadequacies. The result of the meeting was a new site rating model designed to present a better picture of the hazards posed by sites at Air Force installations. The new rating model described in this presentation is referred to as the Hazard Assessment Rating Methodology.

PURPOSE

The purpose of the site rating model is to provide a relative ranking of sites of suspected contamination from hazardous substances. This model will assist the Air Force in setting priorities for follow-on site investigations and confirmation work under Phase II of IRP.

This rating system is used only after it has been determined that (1) potential for contamination exists (hazardous wastes present in sufficient quantity), and (2) potential for migration exists. A site can be deleted from consideration for rating on either basis.

DESCRIPTION OF MODEL

Like the other hazardous waste site ranking models, the U.S. Air Force's site rating model uses a scoring system to rank sites for priority attention. However, in developing this model, the designers incorporated some special features to meet specific DoD program needs.

The model uses data readily obtained during the Record Search portion (Phase I) of the IRP. Scoring judgments and computations are easily made. In assessing the hazards at a given site, the model develops a score based on the most likely routes of contamination and the worst hazards at the site. Sites are given low scores only if there are clearly no hazards at the site. This approach meshes well with the

policy for evaluating and setting restrictions on excess DoD properties.

Site scores are developed using the appropriate ranking factors according to the method presented in the flow chart (Figure 1). The site rating form is provided in Figure 2 and the rating factor quidelines are provided in Table 1.

As with the previous model, this model considers four aspects of the hazard posed by a specific site: the possible receptors of the contamination, the waste and its characteristics, the potential pathways for waste contaminant migration, and any efforts to contain the contamination. Each of these categories contains a number of rating factors that are used in the overall hazard rating.

The receptors category rating is calculated by scoring each factor, multiplying by a factor weighting constant, and adding the weighted scores to obtain a total category score.

The pathways category rating is based on evidence of contaminant migration or an evaluation of the highest potential (worst case) for contaminant migration along one of three pathways. If evidence of contaminant migration exists, the category is given a subscore of 80 to 100 points. For indirect evidence, 80 points are assigned and for direct evidence 100 points are assigned. If no evidence is found, the highest score among three possible routes is used. These routes are surface-water migration, flooding, and ground-water migration. Evaluation of each route involves factors associated with the particular migration route. The three pathways are evaluated and the highest score among all four of the potential scores is used.

The waste characteristics category is scored in three steps. First, a point rating is assigned based on an assessment of the waste quantity and the hazard (worst case) associated with the site. The level of confidence in the information is also factored into the assessment. Next, the score is multiplied by a waste persistence factor, which acts to reduce the score if the waste is not very persistent. Finally, the score is further modified by the physical state of the waste. Liquid wastes receive the maximum score, while scores for sludges and solids are reduced.

The scores for each of the three categories are then added together and normalized to a maximum possible score of 100. Then the waste management practice category is scored. Sites at which there is no containment are not reduced in score. Scores for sites with limited containment can be reduced by 5 percent. If a site is contained and well managed, its score can be reduced by 90 percent. The final site score is calculated by applying the waste management practices category factor to the sum of the scores for the other three categories.

HAZARD ASSESSMENT RATING METHODOLOGY FLOW CHART

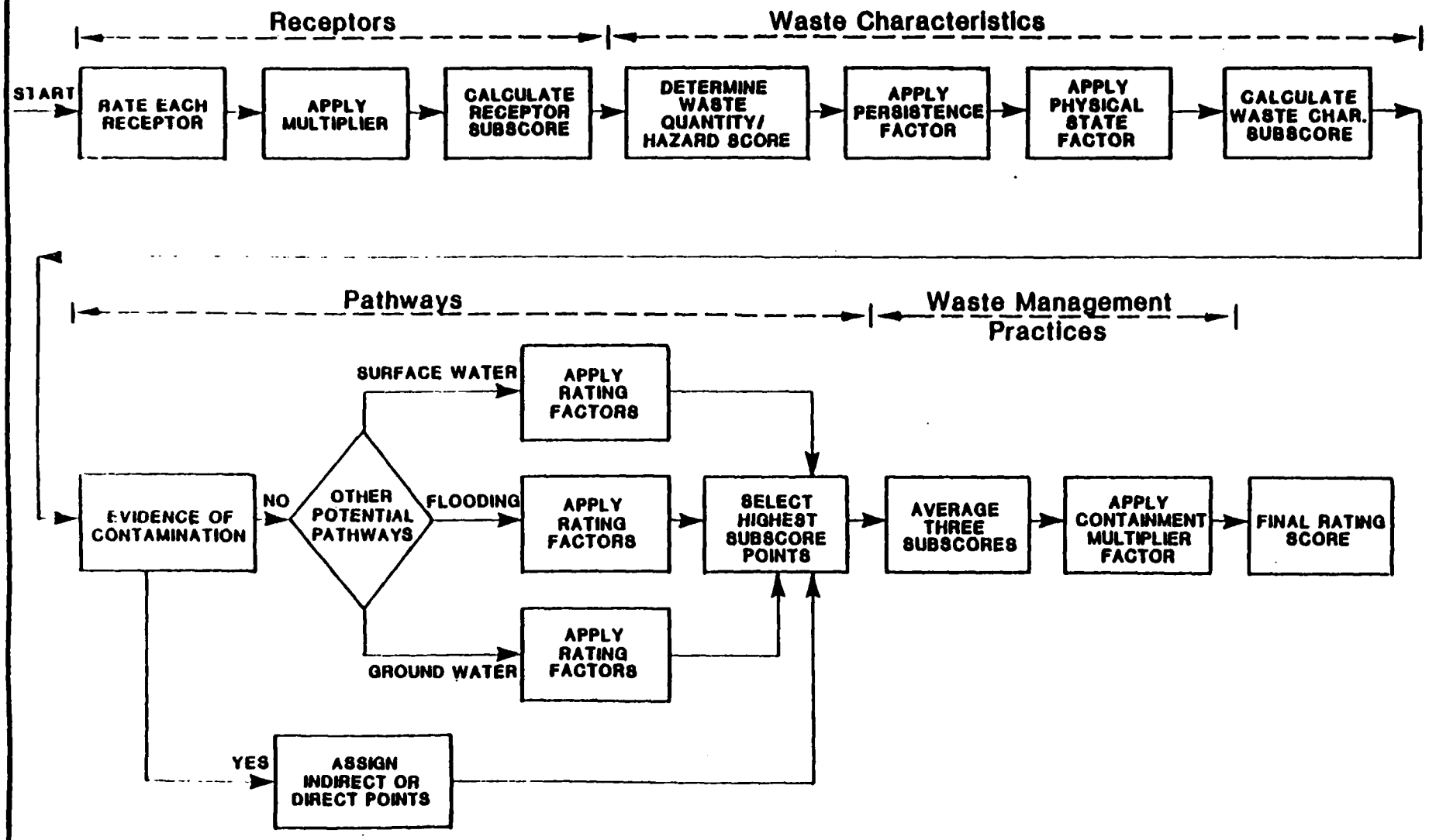


FIGURE 1

FIGURE 2

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE _____

LOCATION _____

DATE OF OPERATION OR OCCURRENCE _____

OWNER/OPERATOR _____

COMMENTS/DESCRIPTION _____

SITE RATED BY _____

I. RECEPTORS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. Population within 1,000 feet of site		4		
B. Distance to nearest well		10		
C. Land use/zoning within 1 mile radius		3		
D. Distance to reservation boundary		6		
E. Critical environments within 1 mile radius of site		10		
F. Water quality of nearest surface water body		6		
G. Ground water use of uppermost aquifer		9		
H. Population served by surface water supply within 3 miles downstream of site		6		
I. Population served by ground-water supply within 3 miles of site		6		
		Subtotals	_____	_____

Receptors subscore (100 X factor score subtotal/maximum score subtotal) _____

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) _____
2. Confidence level (C = confirmed, S = suspected) _____
3. Hazard rating (H = high, M = medium, L = low) _____

Factor Subscore A (from 20 to 100 based on factor score matrix) _____

B. Apply persistence factor
Factor Subscore A X Persistence Factor = Subscore B

_____ X _____ = _____

C. Apply physical state multiplier

Subscore B X Physical State Multiplier = Waste Characteristics Subscore

_____ X _____ = _____

III. PATHWAYS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore _____

B. Rate the migration potential for 3 potential pathways: surface water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.

1. Surface water migration

Distance to nearest surface water		8		
Net precipitation		6		
Surface erosion		8		
Surface permeability		6		
Rainfall intensity		8		
		Subtotals	_____	_____

Subscore (100 X factor score subtotal/maximum score subtotal) _____

2. Flooding

Flooding		1		

Subscore (100 x factor score/3) _____

3. Ground-water migration

Depth to ground water		8		
Net precipitation		6		
Soil permeability		8		
Subsurface flows		8		
Direct access to ground water		8		
		Subtotals	_____	_____

Subscore (100 x factor score subtotal/maximum score subtotal) _____

C. Highest pathway subscore.

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore _____

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors _____
Waste Characteristics _____
Pathways _____

Total _____ divided by 3 = _____
Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score X Waste Management Practices Factor = Final Score

_____ X _____ = _____

Table D-1
HAZARDOUS ASSESSMENT RATING METHODOLOGY GUIDELINES

I. RECEPTORS CATEGORY

Rating Factors	Rating Scale Levels 0	1	2	3	Multiplier
A. Population within 1,000 feet (includes on-base facilities)	0	1-25	26-100	Greater than 100	4
B. Distance to nearest water well	Greater than 3 miles	1 to 3 miles	3,001 feet to 1 mile	0 to 3,000 feet	10
C. Land Use/Zoning (within 1-mile radius)	Completely remote (zoning not applicable)	Agricultural	Commercial or Industrial	Residential	3
D. Distance to installation boundary	Greater than 2 miles	1 to 2 miles	1,001 feet to 1 mile	0 to 1,000 feet	6
E. Critical environments (within 1-mile radius)	Not a critical environment	Natural areas	Pristine natural areas; minor wetlands; preserved areas; presence of economically important natural resources susceptible to contamination	Major habitat of an endangered or threatened species; presence of recharge area; major wetlands	10
F. Water quality/use designation of nearest surface water body	Agricultural or Industrial use	Recreation, propagation and management of fish and wildlife	Shellfish propagation and harvesting	Potable water supplies	6
G. Ground-water use of uppermost aquifer	Not used, other sources readily available	Commercial, industrial, or irrigation, very limited other water sources	Drinking water, municipal water available	Drinking water, no municipal water available; commercial, industrial, or irrigation, no other water source available	9
H. Population served by surface water supplies within 3 miles downstream of site	0	1-15	51-1,000	Greater than 1,000	6
I. Population served by aquifer supplies within 3 miles of site	0	1-50	51-1,000	Greater than 1,000	6

Table D-1--Continued

II. WASTE CHARACTERISTICS

A-1 Hazardous Waste Quantity

S = Small quantity (5 tons or 20 drums of liquid)
M = Moderate quantity (5 to 20 tons of 21 to 85 drums of liquid)
L = Large quantity (20 tons or 85 drums of liquid)

A-2 Confidence Level of Information

C = Confirmed confidence level (minimum criteria below)

- o Verbal reports from interviewer (at least 2) or written information from the records
- o Knowledge of types and quantities of wastes generated by shops and other areas on base

S = Suspected confidence level

- o No verbal reports or conflicting verbal reports and no written information from the records
- o Logic based on a knowledge of the types and quantities of hazardous wastes generated at the base, and a history of past waste disposal practices indicate that these wastes were disposed of at a site

A-3 Hazard Rating

Rating Factors	Rating Scale Levels			
	0	1	2	3
Toxicity	Sax's Level 0	Sax's Level 1	Sax's Level 2	Sax's Level 3
Ignitability	Flash point greater than 200°F	Flash point at 140°F to 200°F	Flash point at 80°F to 140°F	Flash point less than 80°F
Radioactivity	At or below background levels	1 to 3 times background levels	3 to 5 times background levels	Over 5 times background levels

Use the highest individual rating based on toxicity, ignitability and radioactivity and determine the hazard rating.

Hazard Rating	Points
High (H)	3
Medium (M)	2
Low (L)	1

II. WASTE CHARACTERISTICS--Continued

Waste Characteristics Matrix

Point Rating	Hazardous Waste Quantity	Confidence Level of Information	Hazard Rating
100	L	C	H
80	L	C	M
	M	C	H
70	L	S	H
60	S	C	H
	M	C	H
50	L	S	M
	L	C	L
	M	S	H
	S	C	H
40	S	S	H
	M	S	M
	M	C	L
	L	S	L
30	S	C	L
	M	S	L
	S	S	M
20	S	S	L

Notes:
For a site with more than one hazardous waste, the waste quantities may be added using the following rules:

Confidence Level

- o Confirmed confidence levels (C) can be added.
- o Suspected confidence levels (S) can be added.
- o Confirmed confidence levels cannot be added with suspected confidence levels.

Waste Hazard Rating

- o Wastes with the same hazard rating can be added.
- o Wastes with different hazard ratings can only be added in a downgrade mode, e.g., MCM + SCH = LCM if the total quantity is greater than 20 tons.

Example: Several wastes may be present at a site, each having an MCM designation (60 points). By adding the quantities of each waste, the designation may change to LCM (80 points). In this case, the correct point rating for the waste is 80.

B. Persistence Multiplier for Point Rating

Multiply Point Rating Persistence Criteria	From Part A by the Following
Metals, polycyclic compounds, and halogenated hydrocarbons	1.0
Substituted and other ring compounds	0.9
Straight chain hydrocarbons	0.8
Easily biodegradable compounds	0.4

C. Physical State Multiplier

Physical State	Multiply Point Total From Parts A and B by the Following
Liquid	1.0
Sludge	0.75
Solid	0.50

III. PATHWAYS CATEGORY

A. Evidence of Contamination

Direct evidence is obtained from laboratory analyses of hazardous contaminants present above natural background levels in surface water, ground water, or air. Evidence should confirm that the source of contamination is the site being evaluated.

Indirect evidence might be from visual observation (i.e., leachate), vegetation stress, sludge deposits, presence of taste and odors in drinking water, or reported discharges that cannot be directly confirmed as resulting from the site, but the site is greatly suspected of being a source of contamination.

B-1 Potential for Surface Water Contamination

Rating Factors	Rating Scale Levels 0	1	2	3	Multiplier
Distance to nearest surface water (includes drainage ditches and storm sewers	Greater than 1 mile	2,001 feet to 1 mile	501 feet to 2,000 feet	0 to 500 feet	8
Net precipitation	Less than -10 inches	-10 to +5 inches	+5 to +20 inches	Greater than +20 inches	6
Surface erosion	None	Slight	Moderate	Severe	8
Surface permeability	0% to 15% clay ($>10^{-2}$ cm/sec)	15% to 30% clay (10 to 10^{-4} cm/sec)	30% to 50% clay (10^{-4} to 10^{-6} cm/sec)	Greater than 50% clay ($>10^{-6}$ cm/sec)	6
Rainfall intensity based on 1-year 24-hour rainfall	<1.0 inch	1.0 to 2.0 inches	2.1 to 3.0 inches	>3.0 inches	8

B-2 Potential for Flooding

Floodplain	Beyond 100-year floodplain	In 25-year floodplain	In 10-year floodplain	Floods annually	1

B-3 Potential for Ground-Water Contamination

Depth to ground water	Greater than 500 feet	50 to 500 feet	11 to 50 feet	0 to 10 feet	8
Net precipitation	Less than -10 inches	-10 to +5 inches	+5 to + 20 inches	Greater than +20 inches	6
Soil permeability	Greater than 50% clay ($>10^{-6}$ cm/sec)	30% to 50% clay (10^{-4} to 10^{-6} cm/sec)	15% to 30% clay (10^{-2} to 10^{-4} cm/sec)	0% to 15% clay ($<10^{-2}$ cm/sec)	8

Table D-1--Continued

B-3 Potential for Ground-Water Contamination--Continued

Rating Factors	Rating Scale Levels 0	1	2	3	Multiplier
Subsurface flows	Bottom of site greater than 5 feet above high ground-water level	Bottom of site occasionally submerged	Bottom of site frequently submerged	Bottom of site located located below mean ground-water level	8
Direct access to ground water (through faults, fractures, faulty well casings, subsidence, fissures, etc.)	No evidence of risk	Low risk	Moderate risk	High risk	8

IV. WASTE MANAGEMENT PRACTICES CATEGORY

A. This category adjusts the total risk as determined from the receptors, pathways, and waste characteristics categories for waste management practices and engineering controls designed to reduce this risk. The total risk is determined by first averaging the receptors, pathways, and waste characteristics subscores.

B. Waste Management Practices Factor

The following multipliers are then applied to the total risk points (from A):

Waste Management Practice	Multiplier
No containment	1.0
Limited containment	0.95
Fully contained and in full compliance	0.10

Guidelines for fully contained:

Landfills:

- o Clay cap or other impermeable cover
- o Leachate collection system
- o Liners in good condition
- o Adequate monitoring wells

Surface Impoundments:

- o Liners in good condition
- o Sound dikes and adequate freeboard
- o Adequate monitoring wells

Spills:

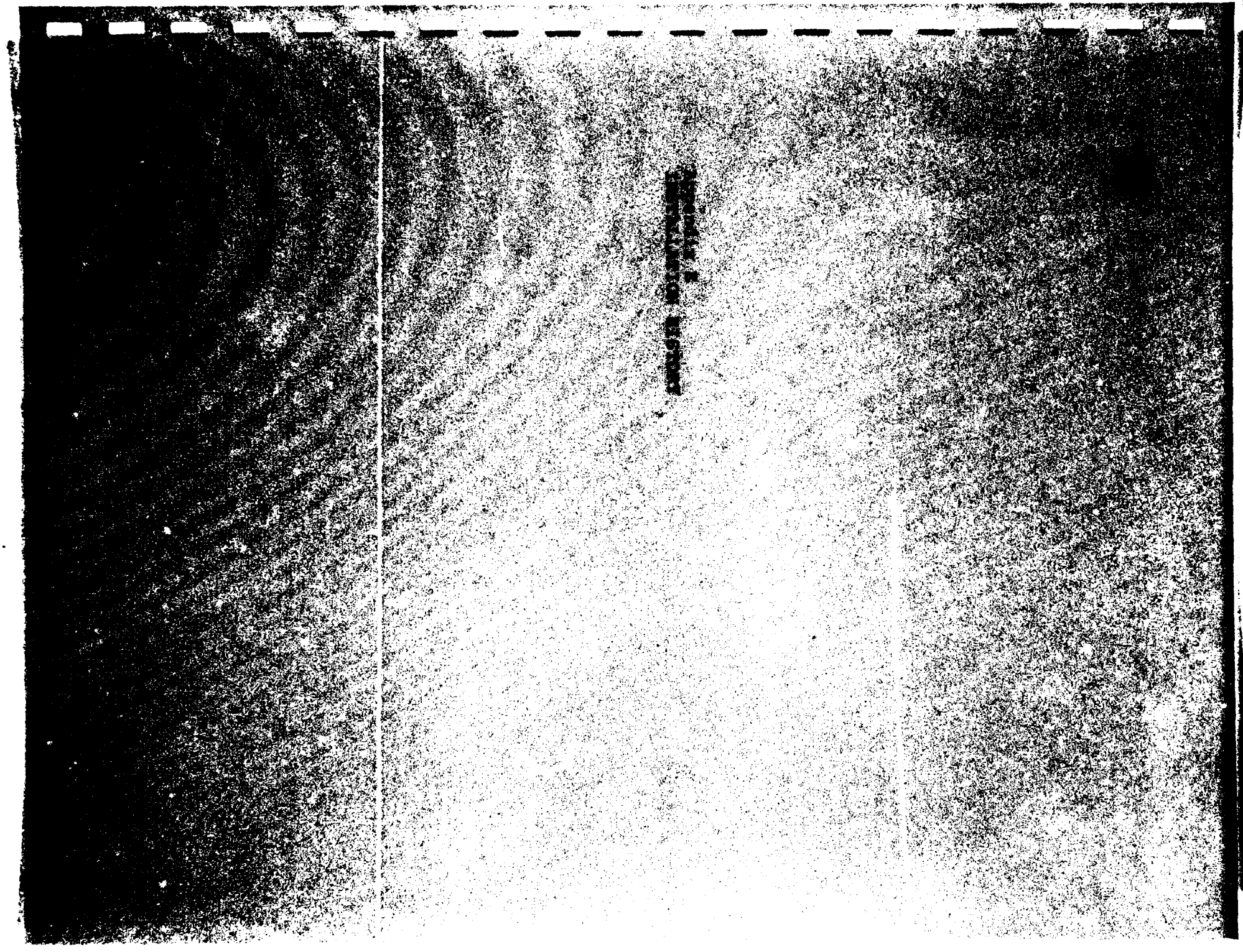
- o Quick spill cleanup action taken
- o Contaminated soil removed
- o Soil and/or water samples confirm total cleanup of the spill

Fire Protection Training Areas:

- o Concrete surface and berms
- o Oil/water separator for pretreatment of runoff
- o Effluent from oil/water separator to treatment plant

General Note: If data are not available or known to be complete the factor ratings under items I-A through I, III-B-1, or III-6-3, then leave blank for calculation of factor score and maximum possible score.

GNR68A



Appendix E
INSTALLATION HISTORY AND MISSION

BASE HISTORY

Moody AFB was established and designated in 1941 as an advanced twin-engine flying school for Army Air Corps use in training cadets under the World War II 30,000-man pilot training program. Approximately 9,000 acres of land in Lowndes and Lanier counties were acquired by fee purchase from the City of Valdosta, Georgia, Use Permit from the Department of Agriculture and lease for the site.

Moody AFB was named in honor of Captain George Moody who was killed in Wichita, Kansas, in 1940 while testing the first AT-10, a twin-engine trainer similar to those first used at this base.

Throughout World War II the base had a capacity population of more than 40,000 officers, airmen, and cadets. It was one of the many bases closed in the post-World War II era. All training activities had stopped by 1946. Moody AFB was placed on inactive status and operated by a reduced force assigned to the 2421st Base Unit, Barksdale Field, Louisiana. A further force reduction occurred leaving one officer and 12 civilians remaining as caretakers.

Moody AFB remained deactivated until the outbreak of Korean hostilities. After rehabilitation by a National Guard Unit, the 140th Fighter Wing of Strategic Air Command (SAC), the 3550th Flying Training Wing was assigned as the resident unit by the Flying Training Air Force of Air Training Command (ATC). In December of 1951, actual training began when the USAF Instrument Pilot Instructor School and Phase I of the USAF Advanced Flying School (Interceptor) were moved from Tyndall AFB, Florida, to Moody AFB. Soon afterwards a jet transition school was added to the base mission.

In April 1952, Moody AFB became one of the nine bases assigned to the newly activated Crew Training Air Force.

Jet transition school was phased out of the mission during the first half of 1953 and in July the Phase II Advanced Flying School from Tyndall, together with its F-94C aircraft were transferred to Moody AFB. In October of 1953, Moody AFB received F-89D aircraft and Phase II for this aircraft was added. Moody AFB now had a complete program for interceptor aircraft training.

F-94C and F-89D aircrew training continued until 1957 under what was now called the 3550 Combat Crew Training Wing. On 1 July 1957, pilot training in the F-86 replaced

the old courses, the Crew Training Air Force was deactivated, and the base was again placed under the Flying Training Air Force.

The Instrument Pilot Instructor School continued to function until 1958. On 1 April the school was relocated to James Connally AFB, Texas. Also on 1 April the Flying Training Air Force was deactivated and Moody AFB came under direct control of ATC.

Moody AFB was redesignated 3550 Flying Training Wing (advanced interceptor) with the mission of training all-weather interceptor pilots.

From 1960 to 1963 Moody underwent many changes. Air Force announced the closing of civilian contract pilot training, and Moody AFB became one of seven bases assigned the new Consolidated Pilot Training mission of pre-flight, primary and basic flying training. The first Military Assistance Program students began training in T-37 and T-28 trainer aircraft in November 1960. By 1961, Moody AFB was training pilots in T-28, T-37, T-33, and C-47 aircraft. In August 1963, the Military Assistance Program (MAP) was transferred to Randolph AFB, Texas. In the 2 years at Moody AFB more than 200 officers and cadets representing twelve allied nations trained at Moody AFB. In November 1963, the first of the T-38 Talon jet trainers arrived replacing the T-33.

From 1965 to June 1973, Moody utilized the T-41, T-37, and T-38 aircraft. The T-41 was used at Valdosta Municipal Airport from August 1965 to June 1973. T-41 training was then consolidated at Hondo Municipal Airport, Hondo, Texas.

On 1 December 1973, the 3550th Pilot Training Wing was redesignated the 38th Flying Training Wing, retaining its mission of undergraduate pilot training carried out at Moody AFB in the T-38 and T-37 aircraft.

The 38th Flying Training Wing continued to train an average of 300 pilots a year, utilizing the Cessna T-37 and the Northrup T-38 Talon, through 26 November 1975.

In November of 1975, Moody AFB graduated its last class of Undergraduate Pilot Training, making 4,432 pilots who have received their silver wings at Moody AFB since 1961.

On 1 December 1975, Air Training Command deactivated the 38th Flying Training Wing at Moody AFB and turned the base over to Tactical Air Command (TAC) and the 347th Tactical Fighter Wing. Under 9th Air Force, Moody AFB is authorized 72 McDonnell-Douglas F-4E Phantom II aircraft and maintains three Tactical Fighter Squadrons, the 68th, 70th, and the 339th.

PRIMARY MISSION

The mission of Moody AFB and the 347th Tactical Fighter Wing is to train assigned tactical forces to a high state of readiness for employment, in contingencies and general war operations, in the roles of:

- o Interdiction and close air support
- o Nuclear strike
- o Air superiority

The mission of the 347th Tactical Fighter Wing is also to establish and maintain the capability to deploy assigned tactical forces worldwide in support of U.S. and Allied Forces. Details of the mission are described below:

347th Tactical Fighter Wing

To execute directed tactical fighter missions designed to destroy enemy forces, supplies, equipment, communications systems, and installations with nuclear (when equipped) or conventional weapons within the design limits of the weapons system capabilities.

When appropriate, active units will provide for the replacement training of combat aircrews and maintenance personnel, in accordance with prescribed syllabi and directives, for replacement to organizations worldwide.

68th, 70th, and 339th Tactical Fighter Squadrons

To establish a training program to achieve the capability of worldwide deployment and to be prepared, upon direction, to deploy. To destroy enemy forces and facilities through the delivery of all types of tactical weapons, compatible with the weapons system possessed, in support of tactical aviation roles of counterair, interdiction, and close air support.

347th Equipment Maintenance Squadron

To accomplish off-equipment maintenance of non-powered and powered Aerospace Ground Equipment (AGE) (support equipment) and selected aircraft components and extensive on-equipment maintenance of aircraft and AGE; and management of assigned munitions stockpile and maintenance of aircraft guns, weapons, suspension, release and launch systems and associated equipment; and to perform explosive ordinance disposal.

347th Aircraft Generation Squadron

To accomplish on-equipment maintenance for assigned aircraft to include aircraft servicing, unscheduled maintenance, preflights, basic post flights, thru flights, home station checks, munition loading, and related functions.

347th Component Repair Squadron

To accomplish off-equipment repair of aircraft and support equipment components; maintenance beyond the capability of the Aircraft Generation Squadron and Equipment Maintenance Squadron; fabrication of parts; and repair and calibration of precision measurement equipment.

347th Supply Squadron

Provide supply support to all base-assigned or attached units through the operation of a USAF Standard Base Supply or satellite supply system as outlined in AFM 67-1 and applicable directives.

347th Transportation Squadron

To provide personnel, equipment, and facilities to adequately support motor vehicle operations, motor vehicle maintenance, traffic management, air terminal services, and travel coordination agency services in support of organizations, assigned and/or attached to their respective installations.

347th Combat Support Group

To provide for the operation, maintenance, and security of an Air Force installation or facilities in support of assigned or attached, dispersed and en route, or alert units. Provide support for tenant units as directed by specific agreements.

347th Civil Engineering Squadron

To provide work and services in the management and custody of fixed real property in accordance with provisions of AFR 85-10. Plan, program, justify, acquire, design, and construct new facilities. Operate, maintain, repair, improve, and dispose of existing facilities and utility systems. Provide fire protection, crash rescue, janitorial, and sanitation services. Conserve resources through efficient land, water, and forestry management, and environmental pollution control and abatement. Provide community, natural resource, and environmental planning services.

347th Security Police Squadron

To provide for weapons system security and the protection of resources; to maintain military law and order; to enforce and maintain standards of conduct and discipline; and to operate and administer installation detention facilities.

347th Services Squadron

To provide base services functions to include billeting management, furnishing management, food service, laundry and dry cleaning, mortuary service, and linen exchange service, in support of host and tenant organization on TAC bases. Function as the consumer advocate in conjunction with the DoD Consumer Representation Program, for support provided by the Air Force Commissary Service (AFCOMS) and Army and Air Force Exchange Service (AAFES). Provide technical supervision and support to services functions located in satellite base units.

USAF Hospital Moody AFB

To provide medical services, which may include specialized treatment, for the military community and other authorized personnel. Each hospital will provide medical services in support of the parent unit mission unless directed otherwise by competent authority.

TENANT MISSION

1878 Communications Squadron

The mission is to provide AFCS/USAF approved communications/electronics service to include AUTOVON and AUTODIN tributary service, TRACALS facilities, and navigational aid systems required to support the missions of Tactical Air Command, Moody AFB, and AFCS.

Detachment 23, Third Weather Squadron

The mission is to provide required meteorological services to the 347th Tactical Fighter Wing in support of the worldwide air weather service mission. This support includes forecasts, observations, met watch, weather warnings, briefings to flying squadrons, aircrew briefings, climatological service to civil engineers, and weather radar information.

Detachment 717, AF Office of Special Investigations

The mission of the AFOSI is to provide criminal, counter-intelligence, internal security and special investigative services for all Air Force activities; to perform distinguished visitor protective services and operations as

authorized; to collect, analyze and disseminate information of investigative and counter-intelligence significance; and to collect and report information which is pertinent to base security.

FAA Radar Approach Control Facility

The mission is to provide safe, orderly and expeditious air traffic control service to the 347th Tactical Fighter Wing and itinerant civil and military aircraft. This service is provided by Valdosta Radar Approach Control (RAPCON) and Moody Control Tower. RAPCON provides control of aircraft departing and arriving and within the MOA's via surveillance radar, precision approach radar, and air to ground communications.

Detachment 8, 4400th Management Engineering Squadron

An extension of HQ TAC manpower requirements on Moody AFB. Management Engineering studies are performed onbase to determine the organizational structure to establish valid statistical manning requirements for each functional area. As requested, Management Advisory studies are conducted to assist local base officials in the effective and efficient use of available resources.

322nd Field Training Detachment

The mission is to provide onsite formal technical instructions necessary to familiarize personnel in the skills, knowledge, and techniques required to operate, maintain, and control assigned weapons systems and associated equipment.

USAF Postal Service Center

The mission is to provide an onbase facility operated by the USAF that delivers personal mail to individuals served through a lock box assigned for his personal use.

Detachment 172 AFROTC

To recruit, select, retain, and commission officer candidates as second lieutenants in the U.S. Air Force. Provide college-level education that qualifies cadets for commissioning in the U.S. Air Force. Develop each cadet's sense of personal integrity, honor, and individual responsibility, enhance knowledge of how the U.S. Air Force serves the national interest, increase understanding of officer professionalism in the U.S. Air Force, and develop potential as a leader and manager.

USAF Judiciary Area Defense Counsel

The Area Defense Program was set up to provide independent defense services at each Air Force base. The ADC office is a detachment of the Headquarters United States Air Force USAF Judiciary and is a tenant organization of Moody AFB. In his basic role, an Area Defense Counsel is expected and required, whenever possible, to perform all "defense functions" at his base of assignment. "Defense functions" are defined as including defense counsel duties in court-martials (including Article 32 proceedings) and administrative boards; Article 15 counseling; military legal advisor duties in foreign countries; and other adverse actions in which counsel for an individual is required or authorized (e.g., AFM 39-12 evaluation officer cases, reports of survey, etc.).

Appendix F
MASTER LIST OF INDUSTRIAL OPERATIONS

Appendix F
MASTER LIST OF INDUSTRIAL ACTIVITIES

Shop Name	Present Location and Dates (Bldg. No.)	Past Location and Dates (Bldg. No.)	Handles Hazardous Materials	Generates Hazardous Waste	Current Treatment/Storage/Disposal Methods
347 CSG					
Auto Hobby	841 1956-Pres.		X	X	Drums to DPDO
Wood Hobby	827 1941-Pres.				
Base Photo Lab	706 1976-Pres.		X		Consumed in use
Combat Arms Training	610 1941-Pres.				
Graphics	706 1976-Pres.				
Fire Department	621 1969-Pres.				
Carpenter	920 1941-Pres.				
Entomology	803 1970-Pres.	904 1941-1970	X	X	Consumed in use; rinsed cans to trash
Refrigeration	916 1941-Pres.		X	X	Drain to sanitary sewer
Heating	921 1941-Pres.		X	X	Drain to sanitary sewer
Paint	916 1941-Pres.		X	X	Drums to DPDO
Plumbing	916 1941-Pres.		X		Consumed in use
Power Production	999 1959-Pres.		X	X	Consumed in use; drain to sanitary sewer
Pavement and Grounds	664 1977-Pres.		X		Consumed in use
Sewage Treatment Plant	1004 1941-Pres.		X	X	Consumed in use; drain to sanitary sewer
Sheet Metal/Welding	916 1941-Pres.		X	X	Consumed in use; drain to sanitary sewer
347 Transportation Squadron					
Battery	903 1941-Pres.		X	X	Neutralized to sanitary sewer
Fire Truck Maintenance	621 1969-Pres.		X	X	Drums to DPDO
General Purpose	977 1962-Pres.	903 1941-1962	X	X	Drums to DPDO
Minor Maintenance	977 1962-Pres.	903 1941-1962			
Paint	904 1941-Pres.		X	X	Drums to DPDO
Refueling Maintenance	769 1962-Pres.		X	X	Drums to DPDO
Special Purpose	976 1941-Pres.		X	X	Drums to DPDO
Welding	976 1941-Pres.				
Packing and Crating	932 1978-Pres.				
347 Supply Squadron					
Fuels Laboratory	722 1972-Pres.		X	X	Consumed in use; drain to sanitary sewer
347 TFW/Operations					
Armament Recording Lab	706 1969-Pres.				

Appendix F--Continued

Shop Name	Present Location and Dates (Bldg. No.)	Past Location and Dates (Bldg. No.)	Handles Hazardous Materials	Generates Hazardous Waste	Current Treatment/Storage/Disposal Methods
347 TFW/CRS					
Avionics					
Avionics AGE	757 1962-Pres.		X		Consumed in use
Communications-Navigation	757 1962-Pres.				
ECM	711 1978-Pres.		X		Consumed in use
Inertial Navigation/WRCS	757 1962-Pres.				
Instrumentation/Auto Pilot	757 1962-Pres.		X		Consumed in use
Photo	757 1962-Pres.				
Sensor	758 1963-Pres.				
Weapons Control/WCS	743 1953-Pres.		X	X	Drums to DPDO
Accessory Maintenance Branch					
Battery/Electrical	785 1966-Pres.	718 1941-1966	X	X	Neutralized to ground surface; Ni/Cd to sanitary sewer
Environmental	785 1966-Pres.	718 1941-1966			
Machine	785 1966-Pres.	718 1941-1966	X	X	Drums to DPDO
Metal Processing	785 1966-Pres.	718 1941-1966	X		Consumed in use
NDI Lab	702 1972-Pres.	718 1968-1972	X	X	Consumed in use; drums to DPDO; silver recovery
Pneudraulics	785 1966-Pres.	718 1941-1966	X	X	Drums to DPDO
Structural Repair	785 1966-Pres.	718 1941-1966	X		Consumed in use
Survival Equipment	753 1962-Pres.				
Aircrew Training Devices Branch					
Flight Simulator	702 1972-Pres.				
PMEL	552 1981-Pres.		X	X	Consumed in use; drain to sanitary sewer
Propulsion Branch					
Small Gas Turbine	758 1963-Pres.	609 1941-1956 718 1956-1963	X	X	Drums to DPDO
Test Cell	789 1977-Pres.	1900 1954-1977	X	X	Drums to DPDO
347 TFW/EMS					
AGE Branch					
Nonpowered AGE	769 1962-Pres.		X	X	Drums to DPDO; o/w separator to sanitary sewer
Powered AGE	755 1962-Pres.		X	X	Drums to DPDO; o/w separator to sanitary sewer
Armament Systems Branch					
Armament Maintenance	700 1978-Pres.		X	X	Drums to DPDO; holding tank inactive

Appendix F--Continued

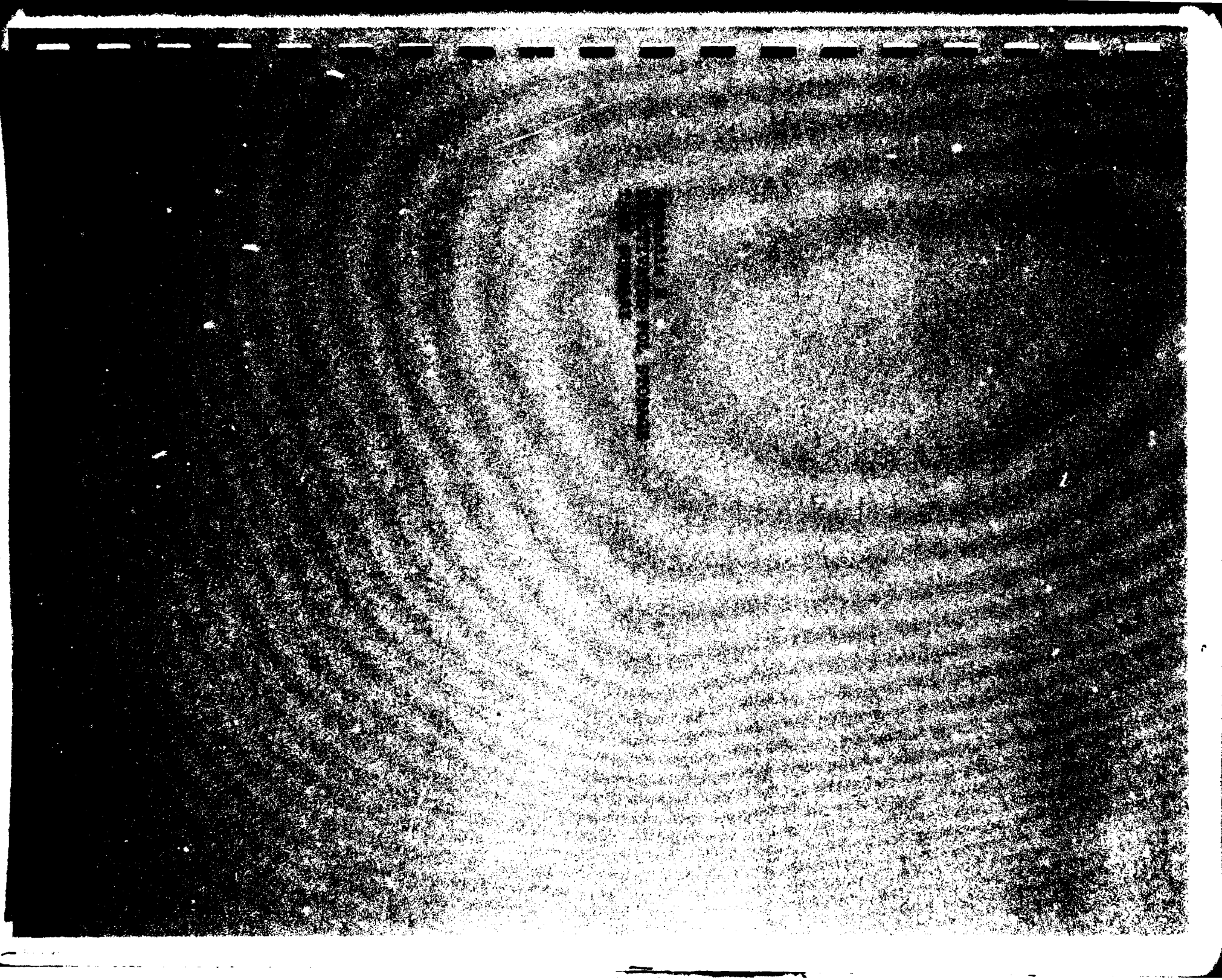
Shop Name	Present Location and Dates (Bldg. No.)	Past Location and Dates (Bldg. No.)	Handles Hazardous Materials	Generates Hazardous Waste	Current Treatment/Storage/Disposal Methods
347 TFW/EMS--Continued					
EOD Branch	703 1941-Pres.		X		Consumed in use
Maintenance Branch					
Corrosion Control	717 1968-Pres.	718 1941-1968 621 1941-1968	X	X	Holding tank; controlled release to sanitary sewer; o/w separator to sanitary sewer; drums to DPDO
Egress	785 1966-Pres.	718 1941-1966	X	X	o/w separator to sanitary sewer
Fuel Systems	788 1980-Pres.	718 1941-1980	X	X	Holding tank to fuels management branch
Phase Docks	718 1941-Pres.		X	X	Combined with wheel and tire shop
Wheel and Tire	718 1941-Pres.		X	X	Drums to DPDO; o/w separator to sanitary sewer
Monitoring Branch					
Equipment Maintenance	1105 1978-Pres.		X		Consumed in use
Missle Maintenance	1108 1978-Pres.		X		Consumed in use
USAF Hospital					
Dental Clinic	900 1967-Pres.		X	X	Consumed in use; drain to sanitary sewer
OB-Labor and Delivery	900 1967-Pres.				
Surgery	900 1967-Pres.				

Appendix G
INVENTORY OF EXISTING POL STORAGE TANKS

Appendix G
INVENTORY OF EXISTING POL STORAGE TANKS
AT MOODY AFB, GEORGIA

Facility No.	Type POL	Capacity (gal)	Aboveground (AG) Belowground (BG)
552	Slop Oil	2,000	BG
571	Heating Fuel	10,000	BG
621	Holding Tank	2,000	BG
Near 758	Contaminated JP-4	5,000	BG
717	Paint Thinners/ Strippers	10,000	BG
722	Slop Fuel	1,500	BG
725	Heating Fuel	10,000	BG
733	Heating Fuel	6,000	BG
755	Holding Tank	250	BG
756	Gasoline/JP-4	250	BG
758	Holding Tank	1,500	BG
785	Heating Fuel	10,000	BG
788	JP-4/PD 680	500	BG
789	Holding Tank[a]	500	BG
841	Holding Tank[a]	500	BG
900	Heating Fuel	10,000	BG
977	Holding Tank[a]	1,500	BG
4131	JP-4	1,000	AG
4131	JP-4	1,000	AG
4131	JP-4	1,000	AG
4131	JP-4	1,500	AG
4131	JP-4	1,500	AG
5016	JP-4	429,903	AG
5016	JP-4	216,093	AG
5016	JP-4	216,148	AG
5016	JP-4	428,526	AG
5016	JP-4	25,000	BG
5016	JP-4	25,000	BG
5046	JP-4	1,000	AG
5051	MOGAS	12,000	BG
5051	MOGAS	12,000	BG
5051	MOGAS	12,000	BG
5056	DIESEL	12,000	BG
5058	JP-4	5,000	BG
5059	MOGAS	1,500	BG
8151	DIESEL	25,000	BG
8151	DIESEL	25,000	BG
8151	DIESEL	25,000	BG
8151	DIESEL	25,000	BG

[a]Holding tank for oil/water separator; contains mixed POL and PD 680.



Appendix H
DEACTIVATED POL STORAGE TANK SUMMARY

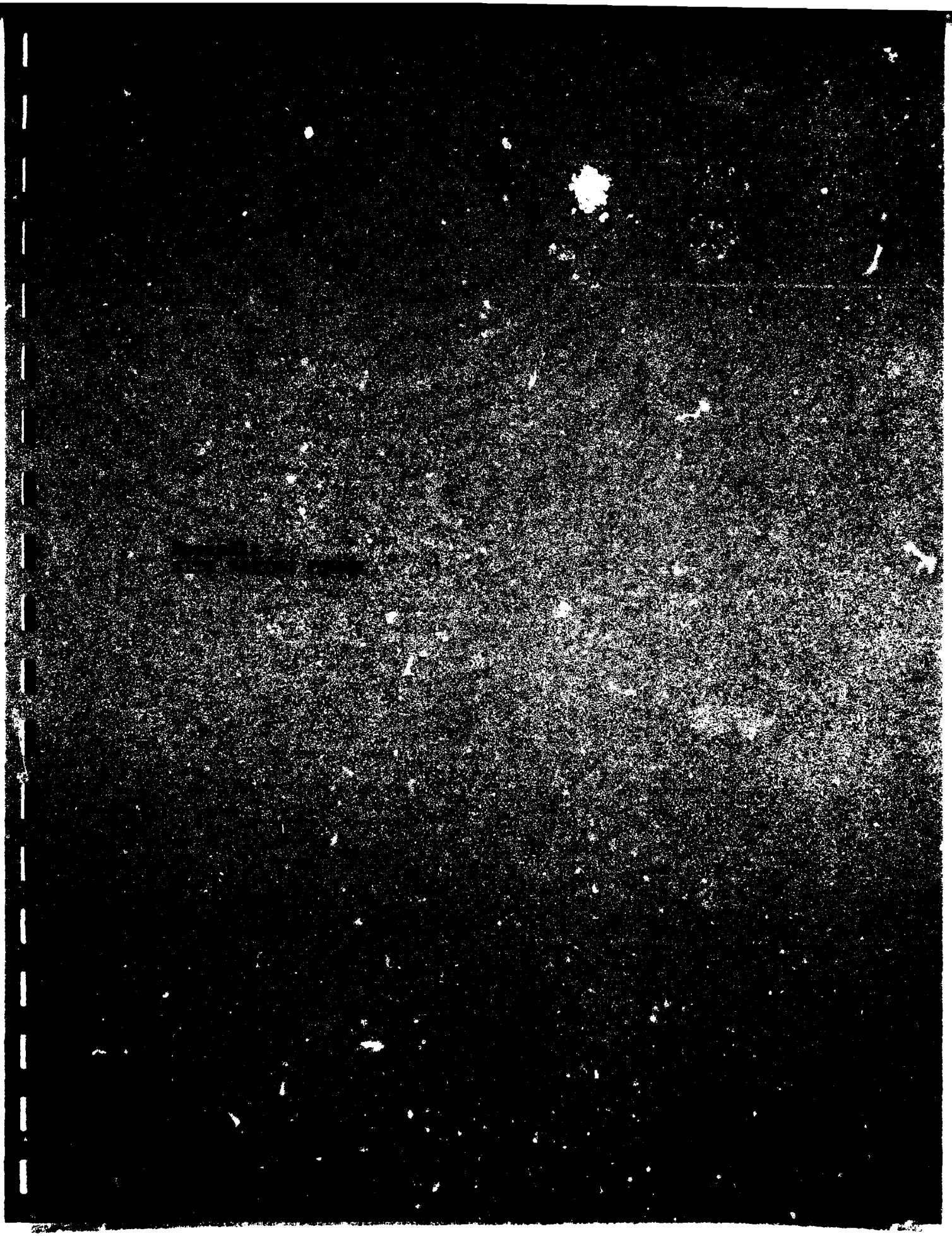
Facility No.	Type POL Previously Stored	Number of Tanks	Capacity per Tank (gal)	Type Tank
977	Waste Oil[a]	1	500	Belowground
5019	Kerosene/AVGAS "pickled"	8	25,000	Belowground
5031	Solvents[a]	1	1,000	Aboveground
Near PB 27	Contaminated JP-4[a]	1	5,000	Belowground
717	Mixed Paint Thinner Filled With Sand	1	1,500	Belowground
769	General POL[a]	1	250	Belowground
669	Low Machine Oil[a]	1	250	Belowground
700	PD 680/Water[a]	1	3,000	Belowground
Near 717	Unknown[a]	1	Unknown	Belowground

[a]Deactivation procedure not verified or POL reported still in tank.

APPENDIX 1
INVENTORY OF OIL/WATER SEPARATORS
AT MOODY AFB, GEORGIA

Appendix I
INVENTORY OF OIL/WATER SEPARATORS
AT MOODY AFB, GEORGIA

Facility	Description	Holding Tank Capacity (gal)	Date of Installation
769	Refuel Shop	250	1962
841	Hobby Shop	1,500	1976
789	Test Cell	500	1977
755	AGE Washrack	500	1977
788	Fuel Systems	1,000	1980
990	Vehicle Washrack	1,000	1982



HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: Burma Road Landfill (Site No. 1)

LOCATION: Moody AFB

DATE OF OPERATION OR OCCURRENCE: 1941-1946, 1951-1952

OWNER/OPERATOR: Moody AFB

COMMENTS/DESCRIPTION: Main Base Landfill during World War II

SITE RATED BY: N. Hatch, B. Haas, R. Knight

I. RECEPTORS

	Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A.	Population within 1,000 feet of site	0	4	0	12
B.	Distance to nearest well	3	10	30	30
C.	Land use/zoning within 1 mile radius	2	3	6	9
D.	Distance to reservation boundary	3	6	18	18
E.	Critical environments within 1 mile radius of site	3	10	30	30
F.	Water quality of nearest surface-water body	1	6	6	18
G.	Ground-water use of uppermost aquifer	0	9	0	27
H.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
I.	Population served by ground-water supply within 3 miles of site	3	6	18	18
			Subtotals	108	180

Receptors subscore (100 x factor score subtotal/maximum subtotal) 60

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) S
2. Confidence level (C = confirmed, S = suspected) S
3. Hazard rating (H = high, M = medium, L = low) M

Factor Subscore A (from 20 to 100 based on factor score matrix) 30

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

30 x 0.8 = 24

C. Apply physical state multiplier

Subscore B x Physical State Multiplier = Waste Characteristics Subscore

24 x 1.0 = 24

III. PATHWAYS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.				
			Subscore	0
B. Rate the migration potential for three potential pathways: surface-water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.				
1. Surface-water migration				
Distance to nearest surface water	3	8	24	24
Net precipitation	1	6	6	18
Surface erosion	1	8	8	24
Surface permeability	1	6	6	18
Rainfall intensity	3	8	24	24
		Subtotals	68	108
Subscore (100 x factor score subtotal/maximum score subtotal)				63
2. Flooding	0	1	0	100
		Subscore (100 x factor score/3)		0
3. *Ground-water migration*				
Depth to ground water	3	8	24	24
Net precipitation	1	6	6	18
Soil permeability	1	8	8	24
Subsurface flows	1	8	8	24
Direct access to ground water	N/A	8	--	--
		Subtotals	46	90
Subscore (100 x factor score subtotal/maximum score subtotal)				51
C. Highest pathway subscore				
Enter the highest subscore value from A, B-1, B-2, or B-3 above.				
			Pathways Subscore	63

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors	60
Waste Characteristics	24
Pathways	63
Total 147 divided by 3 =	49
	Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score x Waste Management Practices Factor = Final Score

49 x 1.0 = 49

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: Northwest Landfill (Site No. 2)

LOCATION: Moody AFB

DATE OF OPERATION OR OCCURRENCE: 1953-1955

OWNER/OPERATOR: Moody AFB

COMMENTS/DESCRIPTION: Main Base Landfill

SITE RATED BY: N. Hatch, B. Haas, R. Knight

I. RECEPTORS

	Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A.	Population within 1,000 feet of site	3	4	12	12
B.	Distance to nearest well	3	10	30	30
C.	Land use/zoning within 1 mile radius	3	3	9	9
D.	Distance to reservation boundary	3	6	18	18
E.	Critical environments within 1 mile radius of site	1	10	10	30
F.	Water quality of nearest surface-water body	0	6	0	18
G.	Ground-water use of uppermost aquifer	0	9	0	27
H.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
I.	Population served by ground-water supply within 3 miles of site	3	6	18	18
			Subtotals	97	180

Receptors subscore (100 x factor score subtotal/maximum subtotal) 54

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) S
2. Confidence level (C = confirmed, S = suspected) S
3. Hazard rating (H = high, M = medium, L = low) M

Factor Subscore A (from 20 to 100 based on factor score matrix) 30

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

30 x 0.8 = 24

C. Apply physical state multiplier

Subscore B x Physical State Multiplier = Waste Characteristics Subscore

24 x 1.0 = 24

III. PATHWAYS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.				
			Subscore	0
B. Rate the migration potential for three potential pathways: surface-water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.				
1. Surface-water migration				
Distance to nearest surface water	3	8	24	24
Net precipitation	1	6	6	18
Surface erosion	0	8	0	24
Surface permeability	1	6	6	18
Rainfall intensity	3	8	24	24
		Subtotals	60	108
Subscore (100 x factor score subtotal/maximum score subtotal)				56
2. Flooding	0	1	0	100
		Subscore (100 x factor score/3)		0
3. Ground-water migration				
Depth to ground water	2	8	16	24
Net precipitation	1	6	6	18
Soil permeability	1	8	8	24
Subsurface flows	0	8	0	24
Direct access to ground water	N/A	8	--	--
		Subtotals	30	90
Subscore (100 x factor score subtotal/maximum score subtotal)				33
C. Highest pathway subscore				
Enter the highest subscore value from A, B-1, B-2, or B-3 above.				
		Pathways Subscore		56

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors	54
Waste Characteristics	24
Pathways	56
Total 134 divided by 3 =	45
	Gross Total Sc

B. Apply factor for waste containment from waste management practices

Gross Total Score x Waste Management Practices Factor = Final Score

45 x 1.0 = 45

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: Southwest Landfill (Site No. 3)

LOCATION: Moody AFB

DATE OF OPERATION OR OCCURRENCE: 1955-1972

OWNER/OPERATOR: Moody AFB

COMMENTS/DESCRIPTION: Main Base Landfill, includes low-level radioactive tube disposal

SITE RATED BY: N. Hatch, B. Haas, R. Knight

I. RECEPTORS

	Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A.	Population within 1,000 feet of site	1	4	4	12
B.	Distance to nearest well	3	10	30	30
C.	Land use/zoning within 1 mile radius	3	3	9	9
D.	Distance to reservation boundary	3	6	18	18
E.	Critical environments within 1 mile radius of site	3	10	30	30
F.	Water quality of nearest surface-water body	1	6	6	18
G.	Ground-water use of uppermost aquifer	0	9	0	27
H.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
I.	Population served by ground-water supply within 3 miles of site	3	6	18	18
			Subtotals	115	180

Receptors subscore (100 x factor score subtotal/maximum subtotal) 64

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) S
2. Confidence level (C = confirmed, S = suspected) S
3. Hazard rating (H = high, M = medium, L = low) H

Factor Subscore A (from 20 to 100 based on factor score matrix) 40

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

40 x 1.0 = 40

C. Apply physical state multiplier

Subscore B x Physical State Multiplier = Waste Characteristics Subscore

40 x 1.0 = 40

III. PATHWAYS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.				
			Subscore	0
B. Rate the migration potential for three potential pathways: surface-water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.				
1. Surface-water migration				
Distance to nearest surface water	3	8	24	24
Net precipitation	1	6	6	18
Surface erosion	1	8	8	24
Surface permeability	1	6	6	18
Rainfall intensity	3	8	24	24
		Subtotals	68	108
Subscore (100 x factor score subtotal/maximum score subtotal)				63
2. Flooding	0	1	0	100
		Subscore (100 x factor score/3)		0
3. Ground-water migration				
Depth to ground water	2	8	16	24
Net precipitation	1	6	6	18
Soil permeability	1	8	8	24
Subsurface flows	1	8	8	24
Direct access to ground water	N/A	8	--	--
		Subtotals	38	90
Subscore (100 x factor score subtotal/maximum score subtotal)				42
C. Highest pathway subscore				
Enter the highest subscore value from A, B-1, B-2, or B-3 above.				
		Pathways Subscore		63

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors	64
Waste Characteristics	40
Pathways	63
Total 167 divided by 3 =	56
	Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score x Waste Management Practices Factor = Final Score

56 x 1.0 = 56

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: Northeast Landfill (Site No. 4)

LOCATION: Moody AFB

DATE OF OPERATION OR OCCURRENCE: 1972-1978

OWNER/OPERATOR: Moody AFB

COMMENTS/DESCRIPTION: Main Base Landfill, contaminated soil disposal

SITE RATED BY: N. Hatch, B. Haas, R. Knight

I. RECEPTORS

	Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A.	Population within 1,000 feet of site	1	4	4	12
B.	Distance to nearest well	3	10	30	30
C.	Land use/zoning within 1 mile radius	1	3	3	9
D.	Distance to reservation boundary	3	6	18	18
E.	Critical environments within 1 mile radius of site	2	10	20	30
F.	Water quality of nearest surface-water body	1	6	6	18
G.	Ground-water use of uppermost aquifer	0	9	0	27
H.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
I.	Population served by ground-water supply within 3 miles of site	3	6	18	18
			Subtotals	99	180

Receptors subscore (100 x factor score subtotal/maximum subtotal) 55

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) S
2. Confidence level (C = confirmed, S = suspected) C
3. Hazard rating (H = high, M = medium, L = low) H

Factor Subscore A (from 20 to 100 based on factor score matrix) 60

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

60 x 1.0 = 60

C. Apply physical state multiplier

Subscore B x Physical State Multiplier = Waste Characteristics Subscore

60 x 0.5 = 30

III. PATHWAYS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.				
			Subscore	0
B. Rate the migration potential for three potential pathways: surface-water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.				
1. Surface-water migration				
Distance to nearest surface water	1	8	8	24
Net precipitation	1	6	6	18
Surface erosion	2	8	16	24
Surface permeability	2	6	12	18
Rainfall intensity	3	8	24	24
		Subtotals	66	108
Subscore (100 x factor score subtotal/maximum score subtotal)				61
2. Flooding	0	1	0	100
		Subscore (100 x factor score/3)		0
3. Ground-water migration				
Depth to ground water	2	8	16	24
Net precipitation	1	6	6	18
Soil permeability	1	8	8	24
Subsurface flows	1	8	8	24
Direct access to ground water	N/A	8	--	--
		Subtotals	38	90
Subscore (100 x factor score subtotal/maximum score subtotal)				42
C. Highest pathway subscore				
Enter the highest subscore value from A, B-1, B-2, or B-3 above.				
			Pathways Subscore	61

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors	55
Waste Characteristics	30
Pathways	61
Total 146 divided by 3 =	49
	Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score x Waste Management Practices Factor = Final Score

49 x 1.0 = 49

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: DDT Burial Site (Site No. 5)

LOCATION: Moody AFB

DATE OF OPERATION OR OCCURRENCE: 1973

OWNER/OPERATOR: Moody AFB

COMMENTS/DESCRIPTION: 10-12 sealed drums, buried under clay cover, marked and fenced

SITE RATED BY: N. Hatch, B. Haas, R. Knight

I. RECEPTORS

	Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A.	Population within 1,000 feet of site	1	4	4	12
B.	Distance to nearest well	3	10	30	30
C.	Land use/zoning within 1 mile radius	1	3	3	9
D.	Distance to reservation boundary	3	6	18	18
E.	Critical environments within 1 mile radius of site	2	10	20	30
F.	Water quality of nearest surface-water body	1	6	6	18
G.	Ground-water use of uppermost aquifer	0	9	0	27
H.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
I.	Population served by ground-water supply within 3 miles of site	3	6	18	18
			Subtotals	99	180

Receptors subscore (100 x factor score subtotal/maximum subtotal) 55

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) S
2. Confidence level (C = confirmed, S = suspected) C
3. Hazard rating (H = high, M = medium, L = low) H

Factor Subscore A (from 20 to 100 based on factor score matrix) 60

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

60 x 1.0 = 60

C. Apply physical state multiplier

Subscore B x Physical State Multiplier = Waste Characteristics Subscore

60 x 1.0 = 60

III. PATHWAYS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.				
			Subscore	0
B. Rate the migration potential for three potential pathways: surface-water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.				
1. Surface-water migration				
Distance to nearest surface water	1	8	8	24
Net precipitation	1	6	6	18
Surface erosion	1	8	8	24
Surface permeability	2	6	12	18
Rainfall intensity	3	8	24	24
		Subtotals	58	108
Subscore (100 x factor score subtotal/maximum score subtotal)				54
2. Flooding	0	1	0	100
		Subscore (100 x factor score/3)		0
3. Ground-water migration				
Depth to ground water	2	8	16	24
Net precipitation	1	6	6	18
Soil permeability	1	8	8	24
Subsurface flows	0	8	0	24
Direct access to ground water	N/A	8	--	--
		Subtotals	30	90
Subscore (100 x factor score subtotal/maximum score subtotal)				33
C. Highest pathway subscore				
Enter the highest subscore value from A, B-1, B-2, or B-3 above.				
		Pathways Subscore		54

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors	55
Waste Characteristics	60
Pathways	54
Total 169 divided by 3 =	56
Gross Total Score	

B. Apply factor for waste containment from waste management practices

Gross Total Score x Waste Management Practices Factor = Final Score

56 x 0.95 = 53

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: Burma Road Fire Department Training Area (Site No. 6)

LOCATION: Moody AFB

DATE OF OPERATION OR OCCURRENCE: 1941-1946, 1951-1955

OWNER/OPERATOR: Moody AFB

COMMENTS/DESCRIPTION: Earthen dike, circular area

SITE RATED BY: N. Hatch, B. Haas, R. Knight

I. RECEPTORS

	Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A.	Population within 1,000 feet of site	0	4	0	12
B.	Distance to nearest well	3	10	30	30
C.	Land use/zoning within 1 mile radius	2	3	6	9
D.	Distance to reservation boundary	3	6	18	18
E.	Critical environments within 1 mile radius of site	3	10	30	30
F.	Water quality of nearest surface-water body	1	6	6	18
G.	Ground-water use of uppermost aquifer	0	9	0	27
H.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
I.	Population served by ground-water supply within 3 miles of site	3	6	18	18
			Subtotals	108	180

Receptors subscore (100 x factor score subtotal/maximum subtotal) 60

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) S
2. Confidence level (C = confirmed, S = suspected) S
3. Hazard rating (H = high, M = medium, L = low) H

Factor Subscore A (from 20 to 100 based on factor score matrix) 40

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

40 x 0.8 = 32

C. Apply physical state multiplier

Subscore B x Physical State Multiplier = Waste Characteristics Subscore

32 x 1.0 = 32

III. PATHWAYS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.				
			Subscore	0
B. Rate the migration potential for three potential pathways: surface-water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.				
1. Surface-water migration				
Distance to nearest surface water	3	8	24	24
Net precipitation	1	6	6	18
Surface erosion	1	8	8	24
Surface permeability	1	6	6	18
Rainfall intensity	3	8	24	24
		Subtotals	68	108
Subscore (100 x factor score subtotal/maximum score subtotal)				63
2. Flooding	0	1	0	100
		Subscore (100 x factor score/3)		0
3. Ground-water migration				
Depth to ground water	3	8	24	24
Net precipitation	1	6	6	18
Soil permeability	1	8	8	24
Subsurface flows	0	8	0	24
Direct access to ground water	N/A	8	--	--
		Subtotals	38	90
Subscore (100 x factor score subtotal/maximum score subtotal)				42
C. Highest pathway subscore				
Enter the highest subscore value from A, B-1, B-2, or B-3 above.				
			Pathways Subscore	63

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors	60
Waste Characteristics	33
Pathways	63
Total 155 divided by 3 =	52
	Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score x Waste Management Practices Factor = Final Score

52 x 1.0 = 52

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: Existing Fire Department Training Area (Site No. 7)

LOCATION: Moody AFB

DATE OF OPERATION OR OCCURRENCE: 1955-Present

OWNER/OPERATOR: Moody AFB

COMMENTS/DESCRIPTION: 5 identified pits within 10 acres; 1 exercise/week to 1975; 4 exercises/year 1975-1982

SITE RATED BY: N. Hatch, B. Haas, R. Knight

I. RECEPTORS

	Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A.	Population within 1,000 feet of site	0	4	0	12
B.	Distance to nearest well	2	10	20	30
C.	Land use/zoning within 1 mile radius	0	3	0	9
D.	Distance to reservation boundary	1	6	6	18
E.	Critical environments within 1 mile radius of site	3	10	30	30
F.	Water quality of nearest surface-water body	1	6	6	18
G.	Ground-water use of uppermost aquifer	0	9	0	27
H.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
I.	Population served by ground-water supply within 3 miles of site	3	6	18	18
			Subtotals	80	180

Receptors subscore (100 x factor score subtotal/maximum subtotal) 44

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) S
2. Confidence level (C = confirmed, S = suspected) C
3. Hazard rating (H = high, M = medium, L = low) H

Factor Subscore A (from 20 to 100 based on factor score matrix) 60

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

60 x 0.8 = 48

C. Apply physical state multiplier

Subscore B x Physical State Multiplier = Waste Characteristics Subscore

48 x 1.0 = 48

III. PATHWAYS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.				
			Subscore	0
B. Rate the migration potential for three potential pathways: surface-water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.				
1. Surface-water migration				
Distance to nearest surface water	2	8	16	24
Net precipitation	1	6	6	18
Surface erosion	1	8	8	24
Surface permeability	2	6	12	18
Rainfall intensity	3	8	24	24
		Subtotals	66	108
Subscore (100 x factor score subtotal/maximum score subtotal)				61
2. Flooding	0	1	0	100
	Subscore (100 x factor score/3)			0
3. Ground-water migration				
Depth to ground water	3	8	24	24
Net precipitation	1	6	6	18
Soil permeability	1	8	8	24
Subsurface flows	0	8	0	24
Direct access to ground water	N/A	8	--	--
		Subtotals	38	90
Subscore (100 x factor score subtotal/maximum score subtotal)				42
C. Highest pathway subscore				
Enter the highest subscore value from A, B-1, B-2, or B-3 above.				
		Pathways Subscore		61

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors	44
Waste Characteristics	48
Pathways	61
Total 153 divided by 3 =	51
	Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score x Waste Management Practices Factor = Final Score

51 x 1.0 = 51

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: Lily Pad Pond Fill Site (Site No. 8)

LOCATION: Moody AFB

DATE OF OPERATION OR OCCURRENCE: --

OWNER/OPERATOR: Moody AFB

COMMENTS/DESCRIPTION: Rubble fill site, some industrial waste disposal

SITE RATED BY: N. Hatch, B. Haas, R. Knight

I. RECEPTORS

	Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A.	Population within 1,000 feet of site	0	4	0	12
B.	Distance to nearest well	2	10	20	30
C.	Land use/zoning within 1 mile radius	0	3	0	9
D.	Distance to reservation boundary	2	6	12	18
E.	Critical environments within 1 mile radius of site	3	10	30	30
F.	Water quality of nearest surface-water body	1	6	6	18
G.	Ground-water use of uppermost aquifer	0	9	0	27
H.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
I.	Population served by ground-water supply within 3 miles of site	3	6	18	18
			Subtotals	86	180

Receptors subscore (100 x factor score subtotal/maximum subtotal) 48

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) S
2. Confidence level (C = confirmed, S = suspected) C
3. Hazard rating (H = high, M = medium, L = low) M

Factor Subscore A (from 20 to 100 based on factor score matrix) 50

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

50 x 0.8 = 40

C. Apply physical state multiplier

Subscore B x Physical State Multiplier = Waste Characteristics Subscore

40 x 1.0 = 40

III. PATHWAYS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.				
			Subscore	80
B. Rate the migration potential for three potential pathways: surface-water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.				
1. Surface-water migration				
Distance to nearest surface water		8		24
Net precipitation		6		18
Surface erosion		8		24
Surface permeability		6		18
Rainfall intensity		8		24
		Subtotals		108
Subscore (100 x factor score subtotal/maximum score subtotal)				
2. Flooding		1		100
		Subscore (100 x factor score/3)		
3. Ground-water migration				
Depth to ground water		8		24
Net precipitation		6		18
Soil permeability		8		24
Subsurface flows		8		24
Direct access to ground water		8		
		Subtotals		
Subscore (100 x factor score subtotal/maximum score subtotal)				
C. Highest pathway subscore				
Enter the highest subscore value from A, B-1, B-2, or B-3 above.				
			Pathways Subscore	80

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors	48
Waste Characteristics	40
Pathways	80
Total 168 divided by 3 =	56
Gross Total Score	

B. Apply factor for waste containment from waste management practices

Gross Total Score x Waste Management Practices Factor = Final Score

56 x 1.0 = 56

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE: North POL Area (Site No. 12)

LOCATION: Moody AFB

DATE OF OPERATION OR OCCURRENCE: 1941-Present

OWNER/OPERATOR: Moody AFB

COMMENTS/DESCRIPTION: Dead trees downstream of drain outlets

SITE RATED BY: B. Haas, N. Hatch, R. Knight

I. RECEPTORS

	Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A.	Population within 1,000 feet of site	2	4	8	12
B.	Distance to nearest well	3	10	30	30
C.	Land use/zoning within 1 mile radius	3	3	9	9
D.	Distance to reservation boundary	3	6	18	18
E.	Critical environments within 1 mile radius of site	1	10	10	30
F.	Water quality of nearest surface-water body	0	6	0	18
G.	Ground-water use of uppermost aquifer	0	9	0	27
H.	Population served by surface-water supply within 3 miles downstream of site	0	6	0	18
I.	Population served by ground-water supply within 3 miles of site	3	6	18	18
			Subtotals	93	180

Receptors subscore (100 x factor score subtotal/maximum subtotal) 52

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) S
2. Confidence level (C = confirmed, S = suspected) S
3. Hazard rating (H = high, M = medium, L = low) H

Factor Subscore A (from 20 to 100 based on factor score matrix) 40

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

40 x 0.8 = 32

C. Apply physical state multiplier

Subscore B x Physical State Multiplier = Waste Characteristics Subscore

32 x 1.0 = 32

III. PATHWAYS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.				
			Subscore	80
B. Rate the migration potential for three potential pathways: surface-water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.				
1. Surface-water migration				
Distance to nearest surface water		8		24
Net precipitation		6		18
Surface erosion		8		24
Surface permeability		6		18
Rainfall intensity		8		24
		Subtotals		108
Subscore (100 x factor score subtotal/maximum score subtotal)				
2. Flooding		1		100
		Subscore (100 x factor score/3)		
3. *Ground-water migration*				
Depth to ground water		8		24
Net precipitation		6		18
Soil permeability		8		24
Subsurface flows		8		24
Direct access to ground water		8		
		Subtotals		
Subscore (100 x factor score subtotal/maximum score subtotal)				
C. Highest pathway subscore				
Enter the highest subscore value from A, B-1, B-2, or B-3 above.				
		Pathways Subscore		80

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors	52
Waste Characteristics	32
Pathways	80
Total 164 divided by 3 =	55
Gross Total Score	

B. Apply factor for waste containment from waste management practices

Gross Total Score x Waste Management Practices Factor = Final Score

55 x 1.0 = 55

Appendix K
PHOTOGRAPHS

GN14649.R0

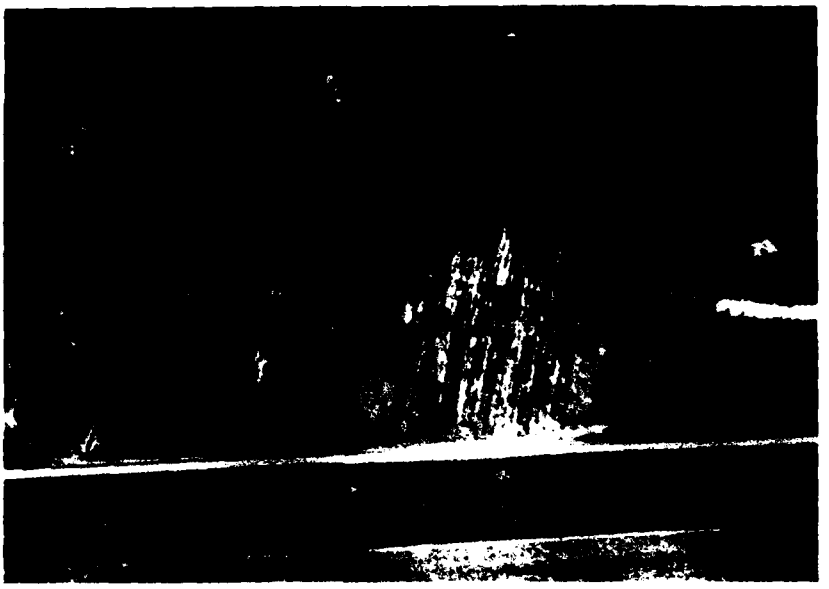


FIGURE K-1. Aerial view of Moody AFB past landfill Site No.3 (Southwest Landfill.)

FIGURE K-2. Site No. 5 (DDT Burial Site).

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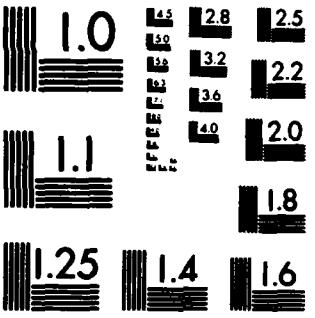

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FIGURE K-3. Aerial view of Lily Pad Pond fill site (Site No. 8).

FIGURE K-4. Periphery of Lily Pad Pond fill site (Site No. 8) showing visible contamination of the pond surface with oily residues.


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